Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

a 821
.A75U5
cop. 2

WATER USE BY NATIVE GRASSES IN HIGH ALTITUDE COLORADO MEADOWS

ARS-W-6
February 1974

U.S. DEPT. OF AGRICULTURE
NAT'L AGRIC. LIBRARY
FEB 14 '74
ACQUISITION SECTION
CURRENT SERIAL RECORDS

WESTERN REGION

AGRICULTURAL RESEARCH SERVICE • U.S. DEPARTMENT OF AGRICULTURE

CONTENTS

	Page
Introduction	1
Review of literature	1
Estimating water use from climatic data	2
Procedure	3
Experimental sites	3
E_t measurements	5
Climatic measurements	6
Precipitation effectiveness	8
Data Reduction	8
Growing season	9
Results	22
Measured E_t	22
Effective precipitation	23
Hay yields	25
Soil temperatures	25
Estimating rates of E_t	27
Outlook	33
Summary and conclusions	34
Literature cited	35
Appendix	36
I Daily values of climate and evapotranspiration measurements	36
II Monthly totals and averages—climate and E_t measurements	55
Acknowledgments	60

Trade names and the names of commercial companies are used in this publication solely to provide specific information. Mention of a trade name or manufacturer does not constitute a guarantee or warranty of the product by the U.S. Department of Agriculture or an endorsement by the Department over other products not mentioned.

WATER USE BY NATIVE GRASSES IN HIGH ALTITUDE COLORADO MEADOWS[1]

by E. G. Kruse and H. R. Haise[2]

INTRODUCTION

The need for measured evapotranspiration (E_t) rates and seasonal E_t on intensively cropped lands has long been recognized. In mountain meadows, where water has traditionally been applied continuously during the growing season, E_t data have not been so important because there has been little attempt to match application amounts to plant requirements. However, in recent years, ranchers have begun to realize the advantages of controlled water application in terms of more effective fertilizer use and increased production from improved grass species. With improved practices, hay yields have been increased fourfold *(5)*[3] over those obtained with native grasses under continuous flooding with no fertilization.

Also in some areas, municipalities are purchasing water rights from irrigators. The amount of saleable water is limited to the average seasonal beneficial E_t. The high value of this water for municipal use makes accurate E_t measurements extremely important. Seasonal beneficial E_t is the lesser of (1) total E_t minus rainfall, or (2) the total volume of water diverted for irrigation.

This paper reports measurements of E_t by meadow grasses, evaporation, and other climatological conditions in the South Park and Gunnison areas of Colorado during three summer seasons between 1968 and 1971. Several methods for estimating E_t from climate measurements under these conditions are derived and evaluated.

REVIEW OF LITERATURE

Water use of crops has been studied by many investigators under a wide range of conditions of plant species, moisture regime, and climate. Results from previous studies which pertain directly to our investigations, will be discussed in this section.

Meeker *(9)* measured E_t of meadow grasses in tanks at the 2,350-meter (7,700-foot) altitude in Colorado's San Luis Valley in 1927 and 1928. In 1927, May-to-October use totaled 45.5 centimeters (17.9 inches) of which 20.3 cm. (8.0 inches) was supplied by precipitation. In 1928, the period of measurement was April 19 to September 14. Water use was 66.0 cm. (26.0 inches), 13.5 cm. (5.3 inches) being precipitation. The water table was maintained about 20 cm. (8 inches) below the surface during these studies. The irrigation season lasted from May 1 to September 1. Hay was cut twice during the season. No explanation for the large difference in water use in 1927 and 1928 is given.

Tipton and Hart [4] and Tipton[5] reported seasonal water use of salt grass in 91-cm (3-foot) diameter sunken tanks, also in the San Luis Valley. Average May through September water use for 1928, 1930, and 1931 seasons was 56.9 cm. (23.4 inches) with a 10-cm. (4-inch) deep water table, 55.0 cm. (21.7

---

[1]Contribution of Soil, Water, and Air Sciences, Western Region, Agricultural Research Service, U.S. Department of Agriculture, in cooperation with Colorado State University Experiment Station.

[2]Agricultural engineer and soil scientist, respectively, USDA, Fort Collins, Colo.

[3]Italic numbers in parentheses refer to Literature Cited, p. 35.

[4]Tipton, R. J., and Hart, F. D. San Luis Valley, Field Investigation, 1930. Consumptive Use Determination, Evaporation Experiments, Drainage Measurements. Colo. State Engin. Off., 17 pp. (Unpublished.) 1931.

[5]Tipton, R. J., Field Investigations. Consumptive Use Determination, Evaporation Experiments, Drainage Measurements—Sump Area Investigations, 1932. Colo. State Engin. Off., 14 pp. (Unpublished.) 1931.

inches) with 30.5-cm. (12-inch) water table and 45.7 cm. (18.0 inches) with a 70-cm. (24-inch) water table.

E_t by native meadow grass was measured in tanks, at Parma Station in Colorado's San Luis Valley at 2,320-meter (7,600-foot) altitude in 1936 by Young and Blaney *(13)*. Total water use from June through September in a tank with water at the soil surface was 82.2 cm. (32.4 inches). A nearby tank, with depth to water table varying from 20 to 25 cm. (8 to 10 inches) used 72.0 cm. (28.4 inches). Each tank was surrounded by areas of similar growth. Evaporation during the same period totaled 66.2 cm. (26 inches) and rainfall 16.2 cm. (6.4 inches).

Water use by bluegrass and sedge at Fort Collins, Colo. *(10)* was also found to decrease with increasing depth to water table. From May 20 to October 14, 1930, use by bluegrass was 104.0 cm. (41.0 inches) with a 15 cm. (6-inch) water table and 93.1 cm. (36.7 inches) with the water table at 30.5 cm. (12 inches). The tanks used in these studies were not surrounded by large areas of similar growth. As a result, measured E_t may be high.

Another investigation *(13)* on saltgrass near Albuquerque, N.M., showed growing season E_t of 94.5 cm. (37.2 inches) with water table depth of 15 cm. (6 inches).

At Coleville, Calif., altitude 1,550 meters (5,100 feet), water table in a meadow grass tank was allowed to vary from 0 to 45 cm. (0 to 18 inches) following the natural water table surrounding the tank *(2)*. E_t on this site from May 27 to September 23, was 72.5 cm. (28.5 inches) compared with pan evaporation of 80.5 cm. (31.7 inches). The previous references indicate that E_t may have been less than potential during the times the deeper water table occurred.

The California Department of Water Resources also collected E_t measurements from meadow grasses in tanks near Alturas, altitude 1,360 meters (4,450 feet)*(3)*. Water table was maintained 15 cm. (6 inches) below the surface. During 6 years of measurement (1959-64), water use averaged 88.4 cm. (34.8 inches) during the May through September period. Pan evaporation for the same interval averaged 93.0 cm. (36.6 inches). Identical measurements of seasonal E_t were obtained during 3 years (1961-63) of study at the Lookout site, a few miles from Alturas.

Water use in mountain meadows at different altitudes was measured by Grable and others *(4)* in 1964. Grable placed E_t tanks (1 m^2 in surface area) in each of four meadows near Gunnison, Colo., at altitudes of 2,240 (7,359 feet), 2,350 (7,710 feet), 2,670 (8,760 feet) and 3,080 m. (10,105 feet). Water was supplied to E_t tanks from reservoirs through a float valve to maintain a water table 30 cm. (12 inches) below the sod surface. Water stage recorders on the reservoirs recorded rate of water use continuously. A similar mechanism was used to record evaporation from a class A pan at each site. Additional measurements included total solar and sky radiation, air temperature, windspeed, and soil temperature at 5 cm. (2 inches). The data were not analyzed to estimate seasonal total E_t.

ESTIMATING WATER USE FROM CLIMATIC DATA

Short-term estimates of E_t, based on climatic data, are being used increasingly to predict timing and amounts of irrigation applications for improved water-use efficiency. Short-term E_t estimates are also needed in designing water transmission facilities and in determining the land area that can be irrigated from a given water supply in the development of new irrigation projects.

Seasonal estimates of E_t are useful in designing water storage facilities and in estimating crop production costs. Where water rights are marketable, seasonal E_t has a direct bearing on the volume of water that can be legally transferred from a unit of irrigated land to another location or use.

A number of equations exist for estimating E_t from measured climatic data. The following three procedures for estimating E_t were evaluated in this study:

1. The equation most commonly used to estimate E_t in the irrigated areas of the United States was developed by Blaney and Criddle *(1)*,

$$E_t = K\Sigma tp/100 \qquad (1)$$

where:

E_t = the evapotranspiration for a given period in inches

K = an empirical evapotranspiration coefficient

t = mean monthly temperature in degrees Fahrenheit

p = the monthly percentage of daytime hours of the year.

Blaney and Criddle *(1)* reported seasonal values of the factor K in equation 1, determined for meadows near Montrose, Colo. K value of 0.75 was listed for grass-hay and 0.80 for seeped land. For a mountain meadow location in the upper Colorado River drainage, k factors of 0.60 were measured in May and June, and 0.75 in July and August.

Blaney[6] computed monthly k values ranging from 0.77 in May and October to 1.35 in July for grasses with water table at the surface from E_t tank data in Colorado's San Luis Valley (1936) *(13)*, where k is a monthly E_t coefficient. For a water table 10 to 20 cm. (4 to 8 inches) below the surface, values varied from 0.77 to 1.26.

2. Another equation, a modification of Penman *(11)*, combines both energy balance and aerodynamic transport concepts to give an estimate of potential E_t with sound physical meaning. One form of this equation, presented by Jensen and others *(7)*, is

$$E_{to} = \frac{\delta}{\delta+\gamma}(R_n + G) + \frac{\gamma}{\delta+\gamma}(15.36)(1.0 + 0.01W)(e_s - e_d) \quad (2)$$

where:

δ = the slope of the vapor pressure–temperature curve

γ = the psychrometric constant

W = daily wind run in miles at height of 2 m.

e_s = mean saturation vapor pressure (mean at maximum and minimum daily air temperature), in millibars

e_d = saturation vapor pressure at mean dew point temperature, in millibars

G = sensible heat flux from soil (negative when to the soil), in langleys

R_n = net radiation, langleys

E_{to} = potential evapotranspiration in langleys.

3. A simplified equation for estimating E_t, based on energy balance concepts, was presented by Jensen and Haise *(6)*:

$$E_t = (0.014T - 0.37)R_s \quad (3)$$

T = the average of daily maximum and minimum temperatures, in degrees Fahrenheit

R_s = total daily solar radiation

E_t = daily estimated potential E_t, expressed in the same units as the solar radiation. Units are commonly expressed in centimeters water evaporated.

Equation 3 was developed using measured E_t values for a number of crops grown in several areas of the western United States. Generally, for estimated values to match measured values through the season, it is necessary to apply corrections early in the growing season, after cutting (of hay or grass) and after crop maturity.

PROCEDURE

E_t of water by meadow grasses, pan evaporation and other climatological conditions were measured in South Park during the summers of 1968, 1969, and 1970, and near Gunnison in 1969, 1970, and 1971 (fig. 1). A description of each experimental site follows.

Experimental Sites

Garo, Site 1 (1968)

The study was conducted on the Augustine-Turner ranch, about 2 miles south of the community of Garo, in 1968. The site was nearly level, in a meadow consisting of native grasses, with fetch distances of 3,000 to 16,000 m. (2 to 10 miles) to the south, west, and north—the directions of the prevailing winds (fig. 2).

Garo, Site 2 (1969, 1970)

Equipment was moved to another site, again on native meadow and at the same altitude of 2,780 m. (9,100 feet) mean sea level (fig. 3). The new site sloped gently to the east. The upwind fetch again was on the order of 16,000 m. (10 miles). A low unirrigated ridge lay just to the west of the instrumented site.

Gunnison, Site 1 (1969, 1970)

Instruments were installed on the Mountain Meadow Research Center near Gunnison, in 1969, at an altitude of 2,440 m. (8,000 feet). The Center is located in an irrigated valley 600 to 900 m. (2,000-3,000 feet) wide that extends for several miles to the north and south (fig. 4).

Gunnison, Site 2 (1971)

The original Gunnison study site was sold in the fall of 1970. Therefore, the experimental equipment was moved a distance of about 800 m. to another irrigated meadow location in 1971. Exposure of the

[6]Personal communication, February 1972.

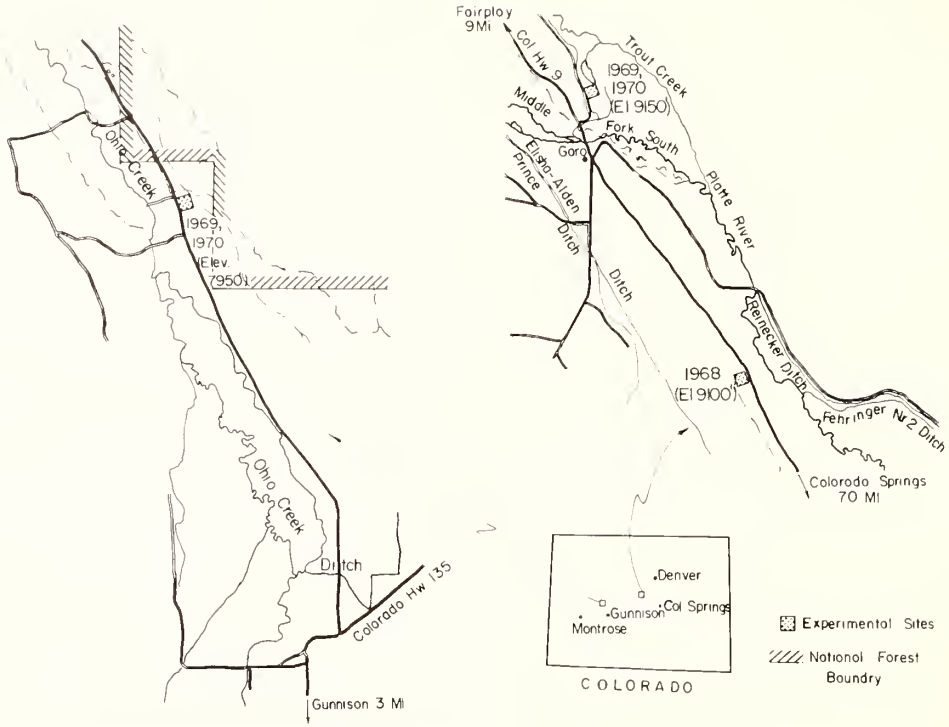


FIGURE 1.—Locations of E_t measurement sites.

FIGURE 2.—E_t measurement site in South Park, facing northwest, on Turner-Augustine Ranch, Garo, Colo., in 1968. Fetch distances were several kilometers to the south, west, and north.

FIGURE 4.—E_t measurement site, facing east, on Mountain Meadow Research Station, Gunnison, Colo., 1969 and 1970. The site was centered in the wide irrigated valley of Ohio Creek. Prevailing winds are from southwest and northwest.

FIGURE 3.—E_t measurement in South Park, facing northwest, on the McDowell Ranch, Garo, Colo., in 1969 and 1970. Site was sloping, separated from a large wet meadow by a low ridge on the west (in background), and surrounded by irrigated meadow on the other three sides.

new site was very similar to the 1969-70 location.

Much of the experimental equipment used was identical for all sites and is described in the following sections.

E_t Measurements

Sunken E_t Tanks

Tanks identical to those used by Grable and others *(4)* were used to measure water use. The tanks were formed of aluminum plate 1 m. by 1 m. (39.4 by 39.4 inches) in area and 0.46 m. (18 inches) deep. The tanks were placed in holes excavated in representative portions of the meadow. The surrounding grasses were disturbed as little as possible. The tanks were filled with a 15-cm. (6-inch) layer of gravel, 10 cm. (4 inches) of soil, and then the original sod from the sites was replaced on top (fig. 5). Water was constantly available to supply the tanks through a float valve, maintaining a water table in the tanks at a constant level relative to the sod surface (fig. 6). The water table was held at a constant depth throughout the season, regardless of variations in the field outside the tanks. Water stage recorders on the water supply reservoirs provided a continuous record of water use.

Depth to water table outside the E_t tanks was not measured regularly. Early each season, before irrigation began, the water table was below the bottom of the E_t tanks. During much of the irrigation season, however, the soil surface was inundated. Figures 23 and 24 (pp. 36, 37) indicate periods of irrigation at Gunnison during 1969 and 1970.

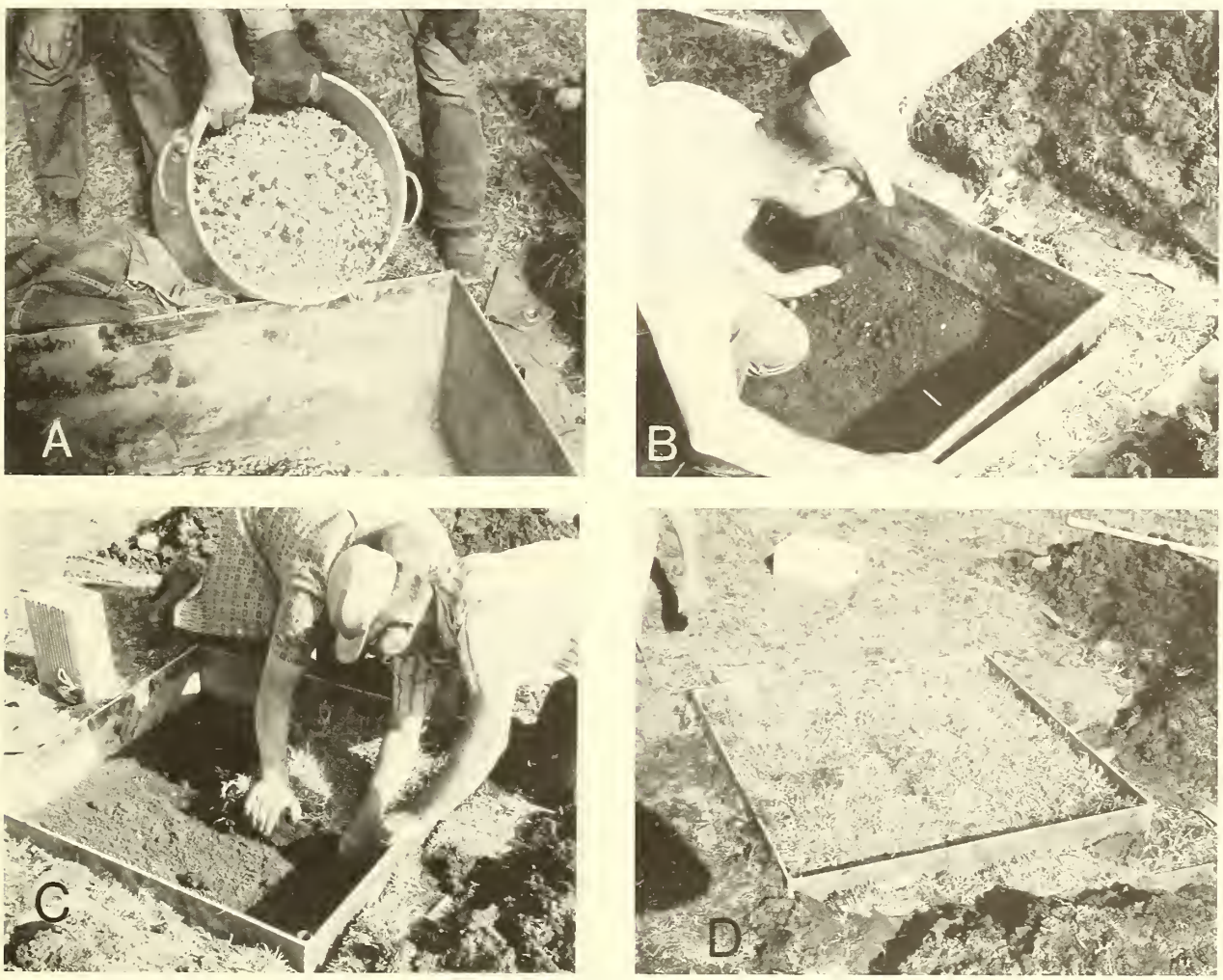


FIGURE 5.—Placement of E_t tanks in South Park, 1968. Profile consisted of sod mat, 10 to 15 cm. (4 to 6 inches) thick, overlying cobbles. Surrounding meadow was disturbed as little as possible during tank installation. *A*, Tanks 0.46 m. (18 inches) deep were filled with 10 cm. (4 inches) course sand and gravel, *B*, 15 cm. (6 inches top soil borrowed from another location, and then *C*, the original sod was replaced. *D* shows sod in place.

In 1970, observation wells were placed at scattered locations in the meadow surrounding the Gunnison E_t site. Water table depths were comparable to those in the tanks through early July. Depth then gradually increased to 50 cm. (20 inches) or more by the end of the season.

Climatic Measurements

A class A evaporation pan was installed at each site, with exposure comparable to the E_t tanks. Water was maintained at a level 5 cm. (2 inches) below the top of the pan, by a float valve identical to those described for the tanks.

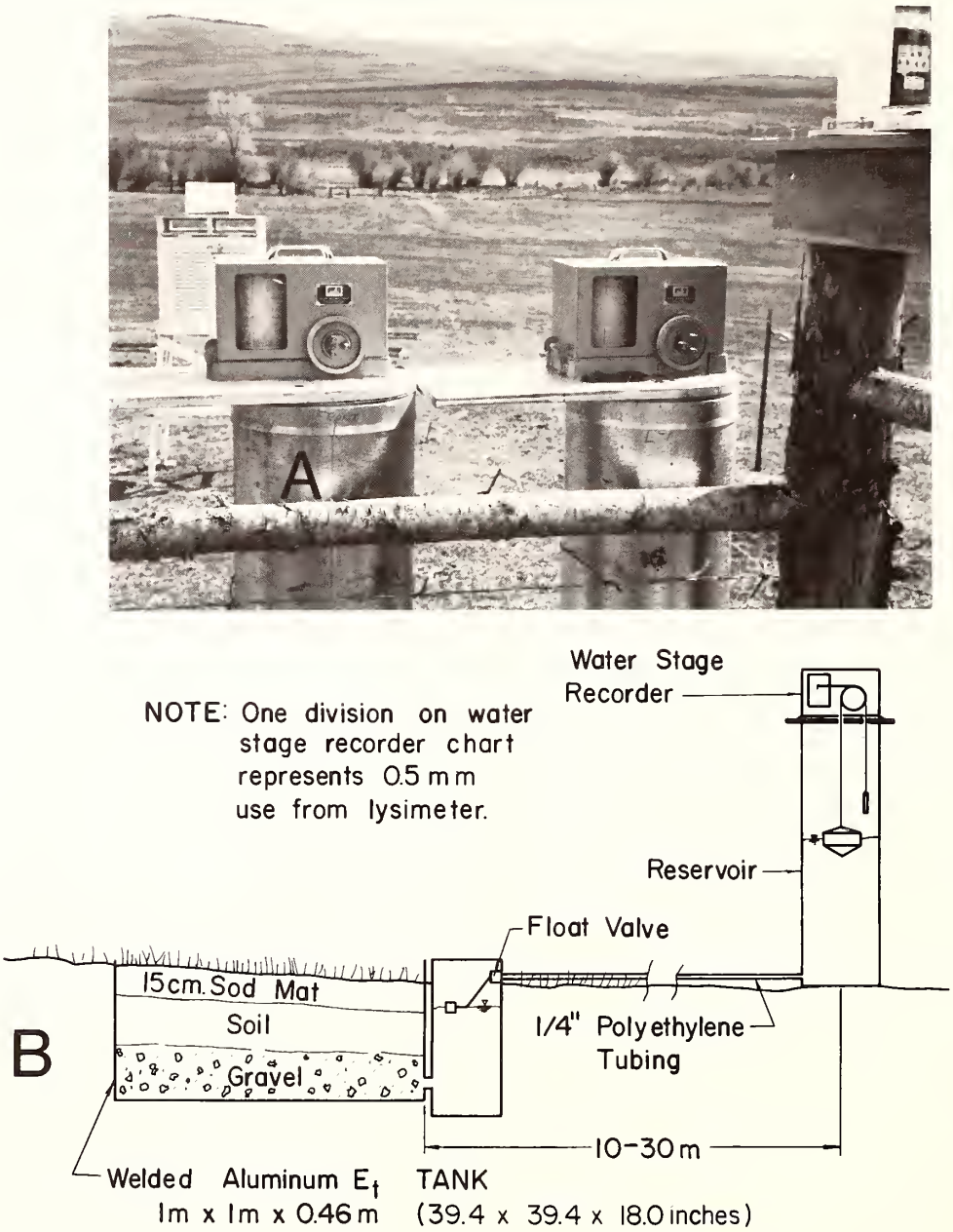


FIGURE 6.—*A*, Equipment used to record rates of water use from E_t tanks and evaporation pans. Reservoir diameters and stage recorder scales were such that two chart divisions equaled 1 mm. water use. After rainfall, the E_t tanks drew no water from supply reservoirs until the collected rain had evaporated or was removed manually from the tanks. *B*, Schematic diagram of E_t tank and supply reservoir.

In 1969-71, precipitation in excess of immediate use was removed from the E_t tanks and evaporation pans by the observer soon after each storm. The water removed was measured. At such times, it was usually necessary to compute water use as an average over 2 or 3 days, based on withdrawal from the supply reservoirs, plus rainfall, less water removed manually.

Pyranometers (Sol-A-Meter[7]) were used to record total solar radiation at each site. The Sol-A-Meter indicates both instantaneous and integrated values of solar and sky short-wave radiation. It requires no external power source. A device to record integrated values photographically every day *(8)* was devised and used in 1969 and 1970 (fig. 7) to obtain daily radiation values.

The two pyranometers were checked against two new Eppley pyranometers for 10-day periods in Scottsbluff, Nebr., during the summer of 1971. Scottsbluff calibrations varied less than 5 percent from the 1970 factory values. The 1969, 1970, and 1971 radiation values quoted in this report are based on a calibration coefficient of 175.0 langleys per ampere-hour for both instruments.

Other instrumentation included a 3-cup anemometer at a height of 2 m. with total miles of wind recorded daily by the photographic apparatus described above, a standard and recording rain gage, a recording hygrothermograph, and maximum, minimum, and current temperature thermometers. A recording soil thermograph was used at the Gunnison site, in 1969 and 1970, to record temperatures at the soil surface outside the E_t tanks (which would correspond to water temperature during periods of irrigation) and at depths of 5 and 15 cm. below the sod surface in one tank.

Dewpoint values were computed as an average of values determined from temperature and relative humidity taken at 6-hour intervals from the hygrothermograph charts. Daily average vapor pressures were similarly computed for use in calculating E_t with the modified Penman equation (equation 2). Solar radiation was converted to equivalent depth of water evaporated by assuming 590 calories necessary to evaporate 1 cm.^{3} of water.

Four E_t tanks were installed at Garo, site 1. Two tanks (and the immediately surrounding meadow) were given a nitrogen application of 112 kilograms per hectare (100 pounds per acre) at the beginning of the growing season. The other two tanks were left unfertilized. Water tables were maintained at a depth of 10 cm. (4 inches) below the sod surface in all tanks throughout the season, unless affected by rainfall, as explained in the next paragraph.

Heavy rains occurred during the month of August. Rainwater falling in the E_t tanks and evaporation pan was not drained, so a period of about 3 weeks elapsed without demand for water from the reservoirs. Water surface in the tanks was at or above the sod surface during part of this period. The total water use for this period was determined, but daily values were obscured.

Only two tanks were used at Garo, site 2. Both tanks were operated identically. In 1969, the water table was maintained at a depth of 10 cm. (4 inches) below the sod surface. The water table was held at a depth of 2.5 cm. (1 inch) below the surface in 1970, in an attempt to reduce the variation in E_t from the two tanks noted the previous year.

Four E_t tanks were installed at Gunnison, site 1.

[7]Manufactured by Matrix, Inc., Phoenix, Ariz.

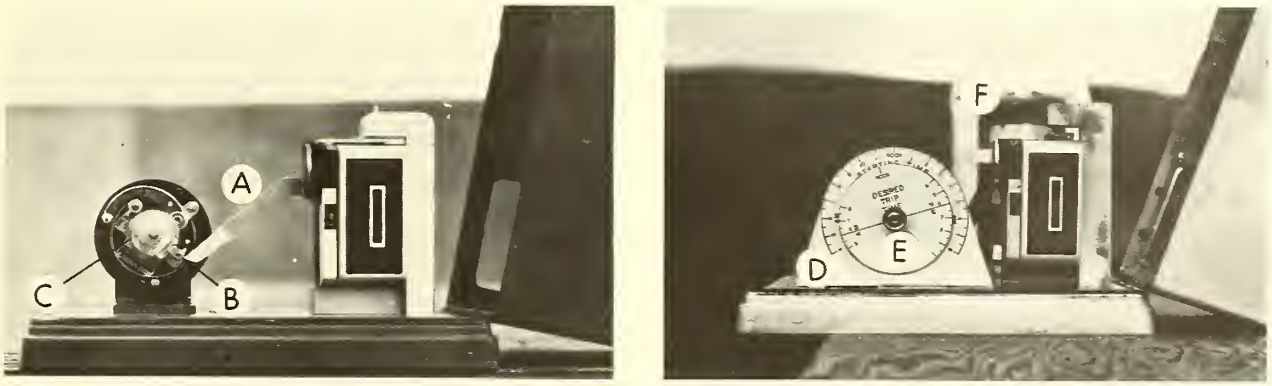


FIGURE 7.—Automatic device for photographing data from climatic instruments. The camera shutter lever, *A*, is tripped by cam, *B*, which rotates at rate controlled by gear ratio on recorder clock, *C*. Camera advances film automatically each time shutter is released. Starting time dial, *D*, fixed to instrument base, and desired trip time dial, *E*, fixed to rotating cam, allow the desired trip time to be set at any time the device is serviced. Pyranometer, *F*, is visible in background.

Water table depths were maintained at 10 cm. (4 inches) in 1969 and 2.5 cm. (1 inch) in 1970.. Two of the four tanks were sheltered for effective rainfall determination as described in a following section. Eight E_t tanks were installed on Gunnison site 2. The original sod (primarily bluegrass) was placed in six tanks. A sod consisting primarily of sedges and rushes *(Juncus* and *Carex)* taken from a waterlogged area of the meadow, was placed in the two remaining tanks.

The float valves were set to maintain the water table at the soil surface on the tanks containing the rush-sedge sod, and in two of the bluegrass tanks. Of the other four bluegrass tanks, two were maintained with a 10-cm. (4-inch) and two with a 30-cm. (12-inch) deep water table. The meadow surrounding this E_t-tank location was irrigated continuously during the 1971 growing season, except during the period preceding and following harvest in August.

Precipitation Effectiveness

The recorder charts on the E_t tank reservoirs in South Park, in 1968, indicated that small amounts of precipitation, about 0.13 to 0.50 cm. (0.05 to 0.20 inches), frequently were adequate to stop withdrawal of water from the reservoirs for several hours. The 1969 and 1970 Gunnison site was equipped to quantitatively evaluate precipitation effectiveness. Two of the four tanks at Gunnison were left uncovered throughout the season. The other two tanks were provided with roofs on tracks, so that the tanks could be covered at the start of each storm and uncovered as soon as the storm ended (fig. 8).

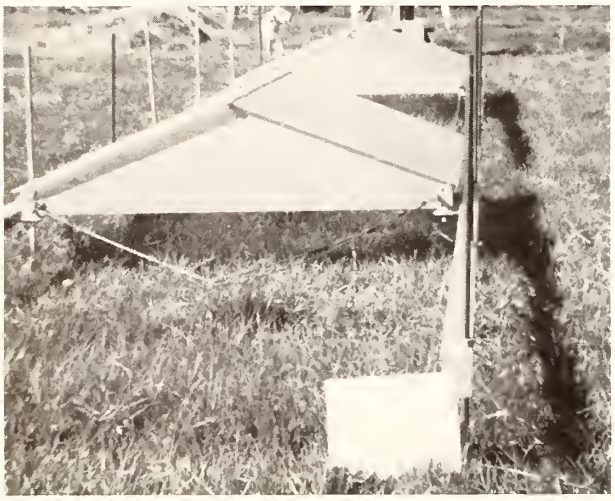


FIGURE 8.—Translucent Fiberglas roofs used to protect Gunnison E_t tanks L–1 and L–2 from rainfall. Roofs were automatically rolled over tanks when rainfall was sensed, then retracted soon after the end of the storm.

The roofs were 120 by 120 cm. (48 by 48 inches) and consisted of transparent Fiberglas panels on plywood frames. The roofs were equipped to roll on garage door tracks to positions covering or exposing the tanks. Power was supplied by an automatic garage door opener consisting of a one-half horsepower reversible motor, speed reducer, and chain drive. Limit switches on the chain regulated the translation distance and stopped the motor after each period of activation.

The motor was started to cover the tanks when wetness was sensed by the mechanism shown in figure 9. This mechanism utilized the conductivity of rainwater to activate a motor start relay. The sensor contained a small heat source so that condensation would not form on the sensing surfaces. The heat source also dried the sensing surface within about 5 minutes after rainfall ended, reducing delays in the covers opening. A wiring diagram for the rainfall sensing system is shown in figure 9. The covers were mounted about 30 cm. (1 foot) above the tanks so that the tanks could receive circulation and sunlight, even when covered.

The difference in the measured demand for irrigation water for the protected and unprotected tanks allows the effectiveness to be determined directly by the equation:

$$PE = \frac{\Delta D}{P} \qquad (4)$$

PE = precipitation effectiveness, expressed as a fraction

ΔD = difference in irrigation water demand from the reservoirs supplying the protected and unprotected E_t tanks

P = measured precipitation, expressed in the same units as the irrigation water demand.

PE is usually determined from measurements for a 1- or 2-day period, such that the unprotected tanks are drawing reservoir water at the same rate as the protected tanks at the beginning and end of the period.

Data Reduction

Field data on temperatures, relative humidity, evaporation, and tank E_t were recorded on charts by hygrothermographs and water stage recorders. An autotrol chart digitizer was used to transfer values of the coordinates of the traces from these charts to punched cards for computer analysis.

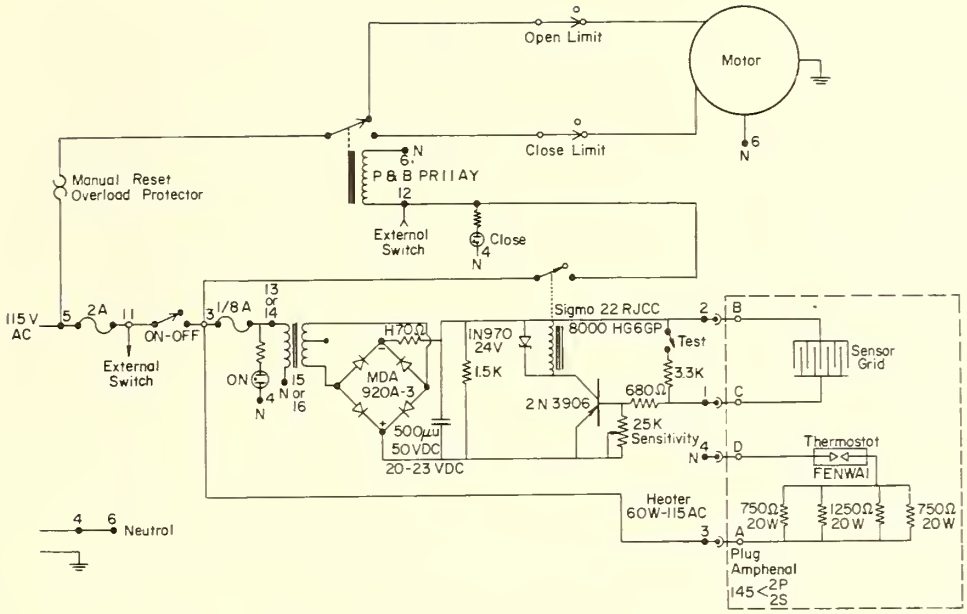


FIGURE 9.—Wiring diagram for rainfall sensor and motor that operated lysimeter roofs.

The computer was programmed to list daily values of each measured variable. The 24-hour interval, ending at 6:00 p.m. on the day listed, was the standard period of analysis. Dewpoint temperatures and water vapor pressures were calculated for each 6-hour interval from values of air temperature and relative humidity, then averaged to give representative daily values.

When daily readings of wind, solar radiation, evaporation or E_t were missing, the computer calculated and listed average daily values for longer intervals.

Large amounts of precipitation could stop the withdrawal of water from the reservoirs serving the evaporation pans and unprotected E_t tanks for periods of several days. In 1969, 1970, and 1971, an amount of water equivalent to the precipitation volume was removed from the tanks as soon as possible after the storms so that information on rates of water use would not be lost. The computer analyzed such data by adding measured precipitation to reservoir withdrawal, subtracting water removed from the tanks, and averaging over the appropriate interval to give net daily water use.

Copies of computer output of daily values of climatic conditions and E_t are reproduced in Appendix I. The total and average monthly values of the same variables are shown in Appendix II.

Computer plots of daily climate and E_t measurements were also generated (figs. 10-14.). For some of these plots, data have been smoothed by a 5-day running average to show trends more clearly. The plots are grouped on one page for each site and year so that trends in climate, measured E_t, and estimated E_t can be compared visually.

Growing Season

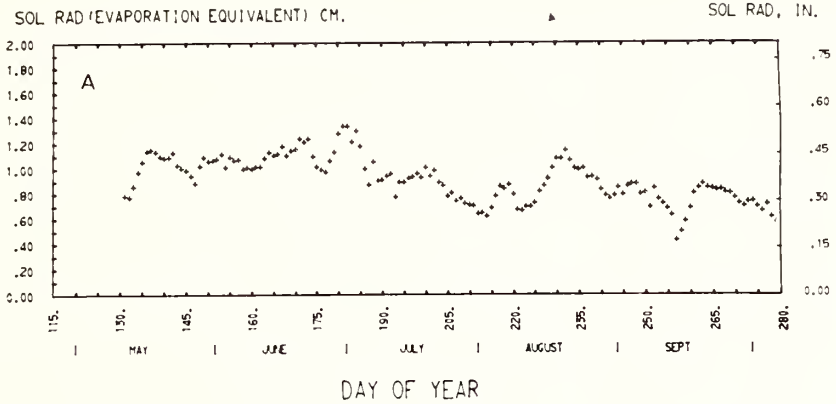
The growing season for grasses is considerably longer than the frost-free period. One method of estimating growing season length is based on the time interval between threshold minimum temperatures in spring and fall. Plots of minimum temperature for each season and location of measurement are given in figures 10 to 14. Threshold temperatures of 20, 24, 28, and 32° F. are indicated by horizontal lines on the plots.

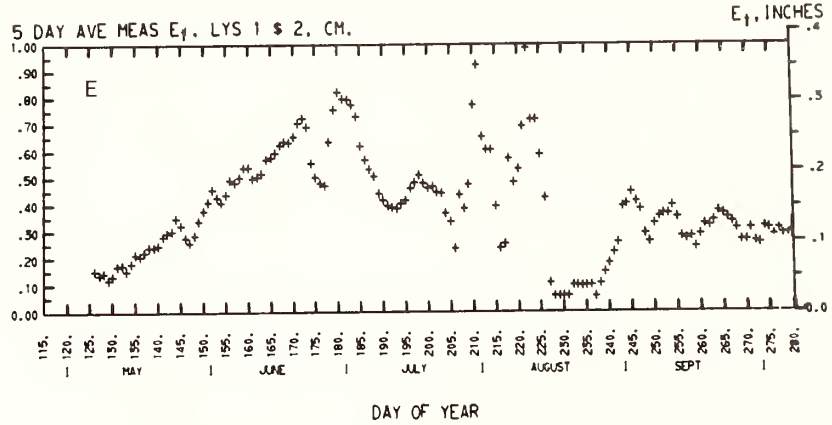
Long-term records for Gunnison indicate the average season lengths between days with given minimum temperatures as follows: 60 days for 32°F.; 94 days, 28°; 121 days, 24°; 150 days, 20°; and 175 days, 16° *(12)*.

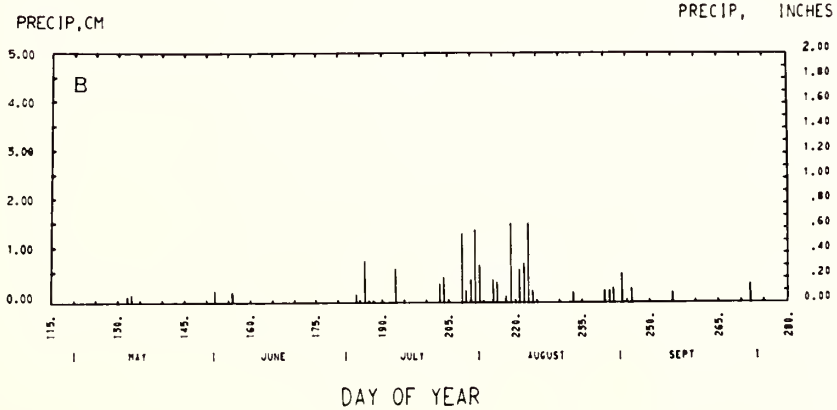
Siemer and Heermann *(12)* state that grasses are not seriously hurt until minimum temperatures drop to 24° F. Gunnison, on this basis, would provide an average 121-day growing season for meadow grasses.

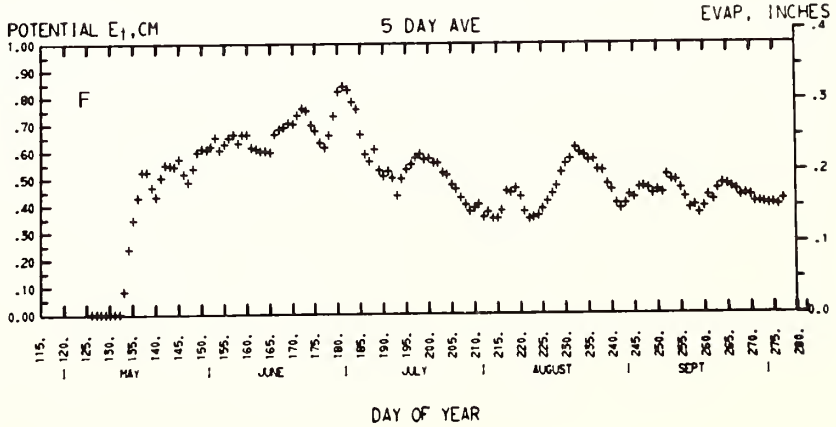
Accumulated degree-days, the sum of the positive differences between mean daily temperature and some arbitrary threshold temperature, may also characterize the climate of an area and correlate

Text continues on page 20.

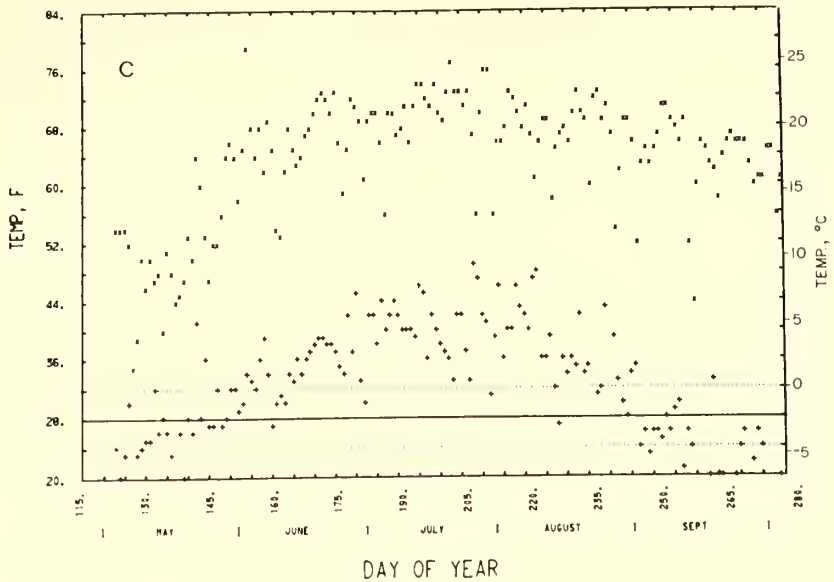


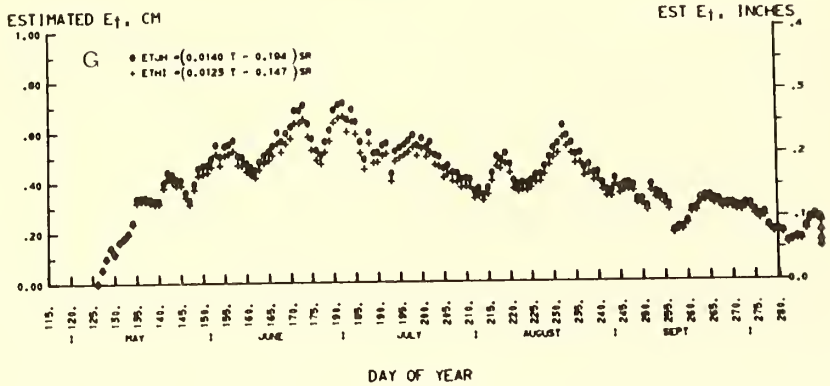






See legend below.





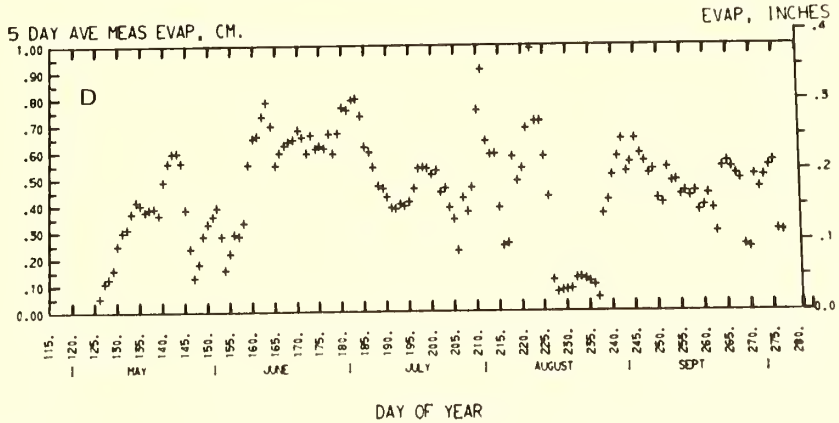
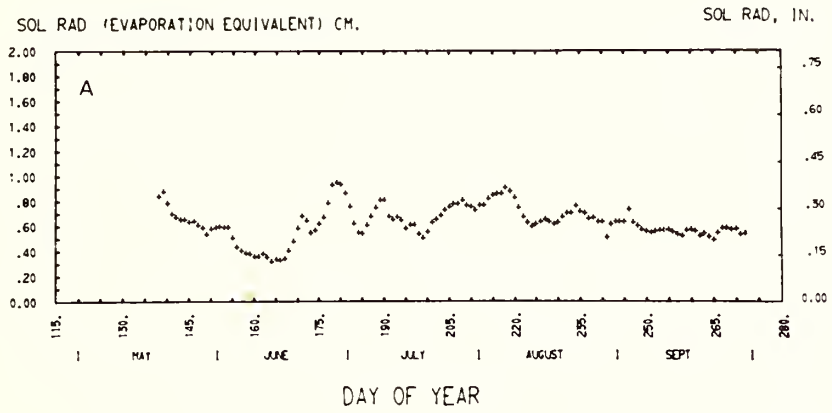
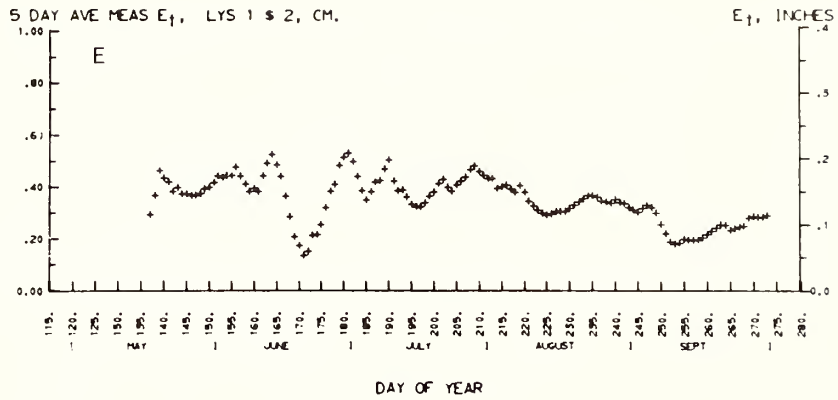
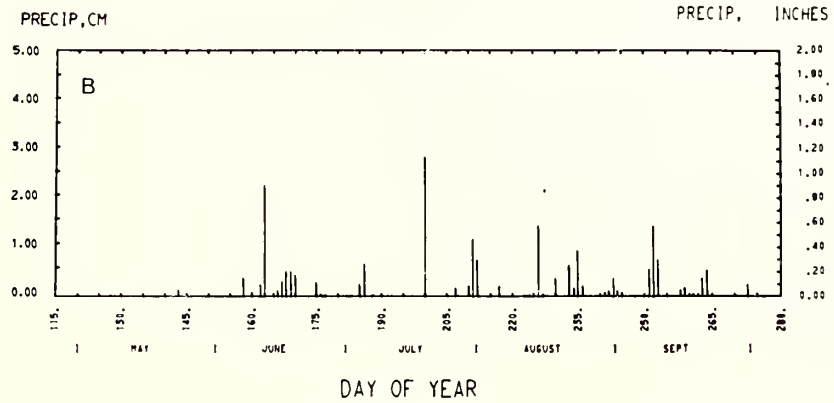
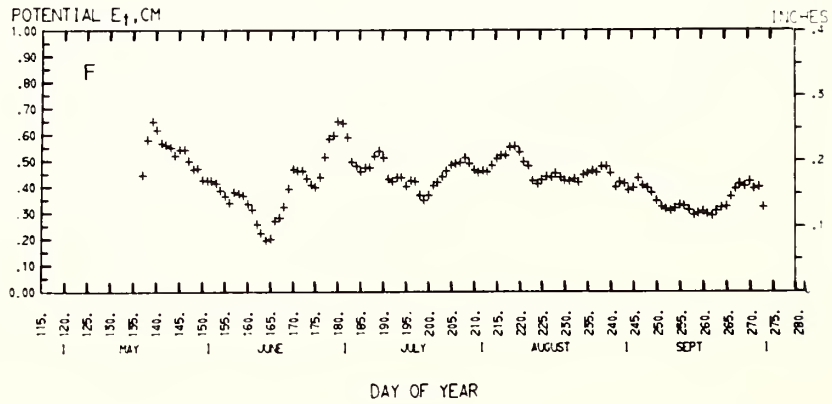


FIGURE 10.—Measured daily climatic and E_t data and estimated E_t for Garo, 1968. Plots A, D, E, F, G are smoothed by means of a 5-day running average.

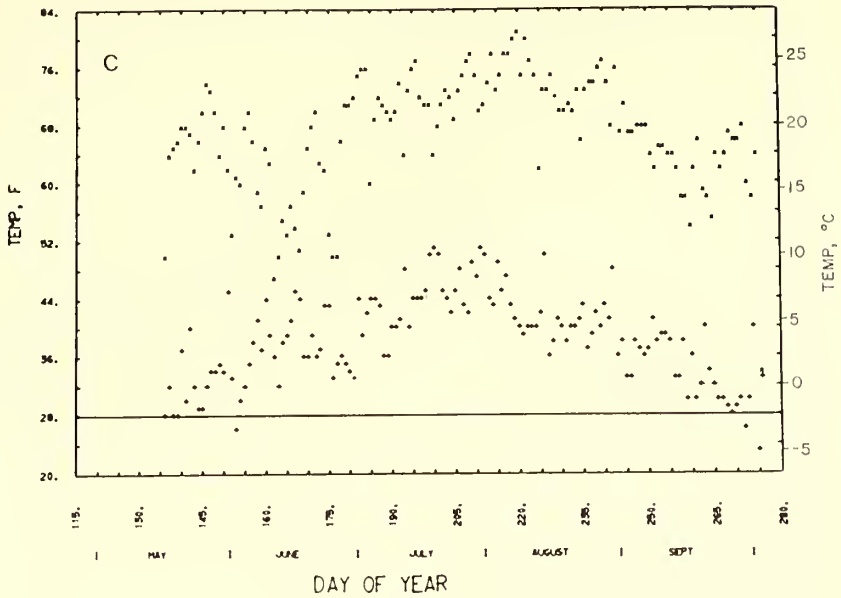


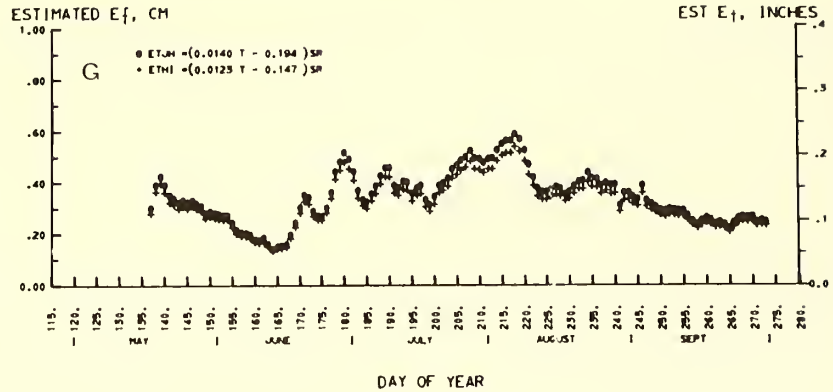






See legend below.





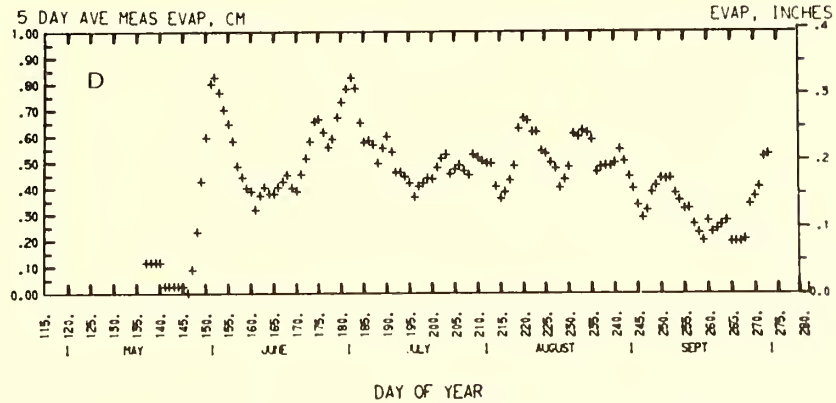
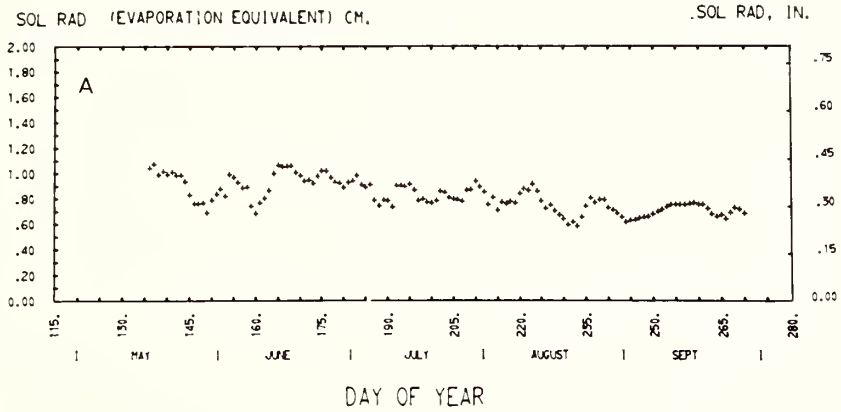
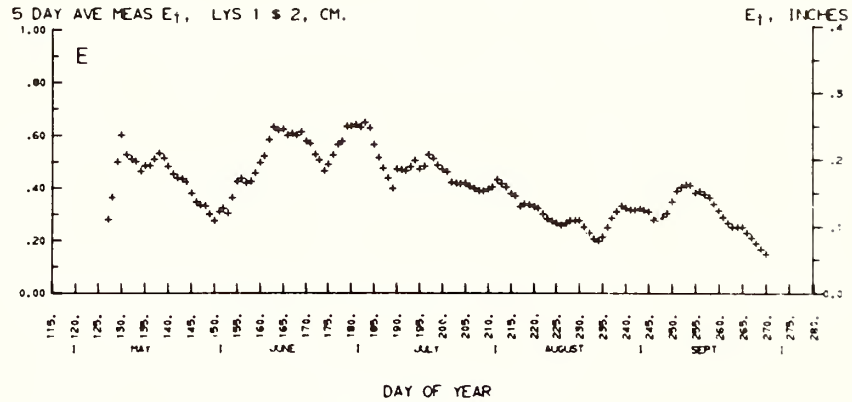
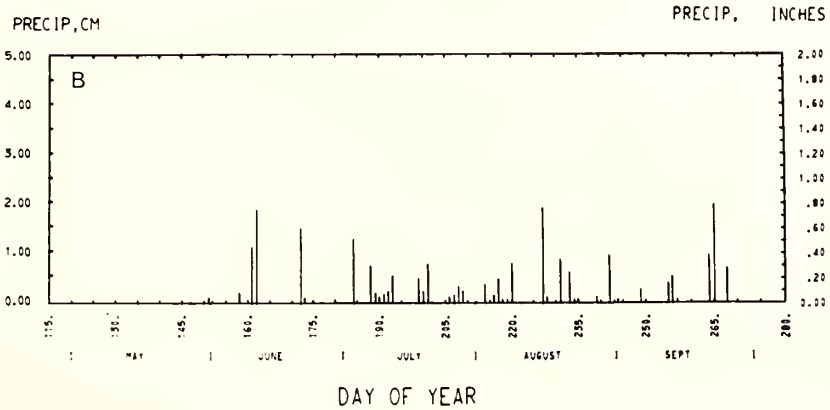
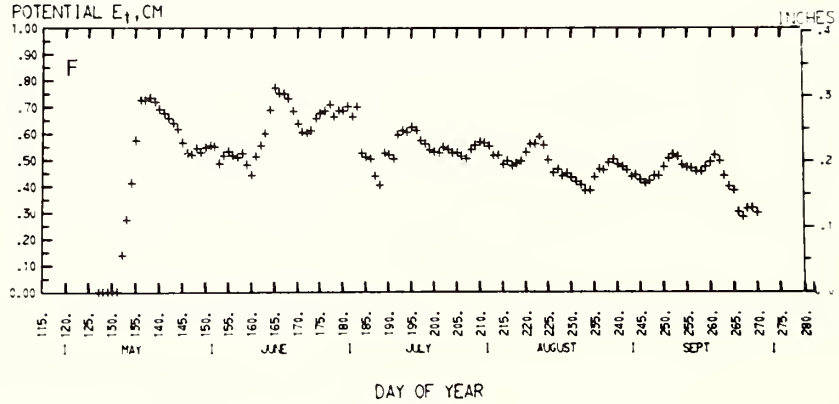


FIGURE 11.—Measured daily climatic and E_f data and estimated E_f for Garo, 1969. Plots A, D, E, F, G are smoothed by means of a 5-day running average.

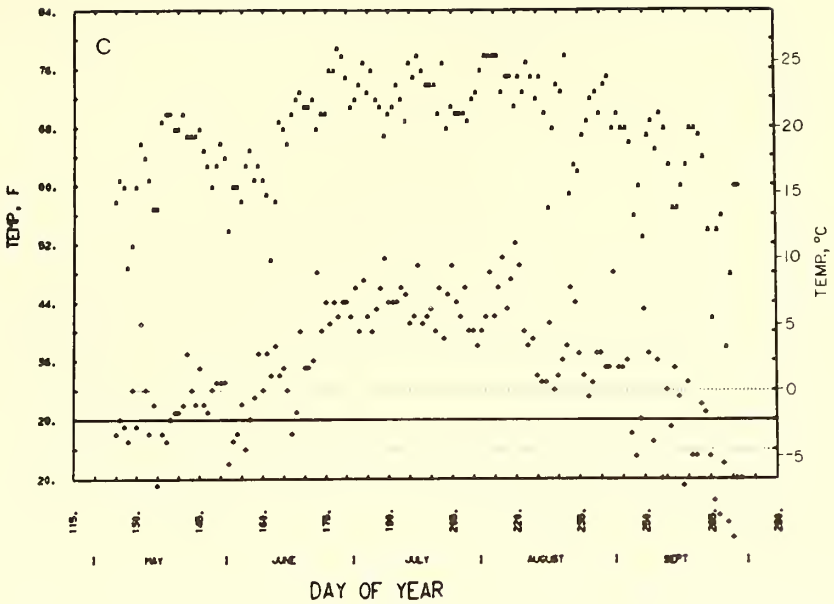


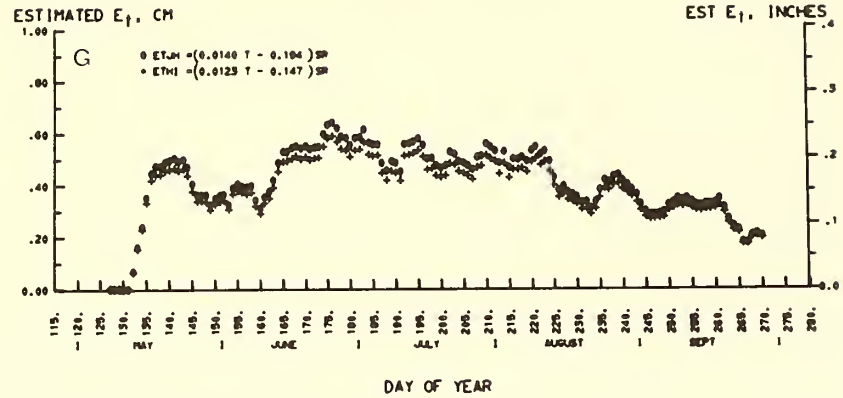






See legend below.





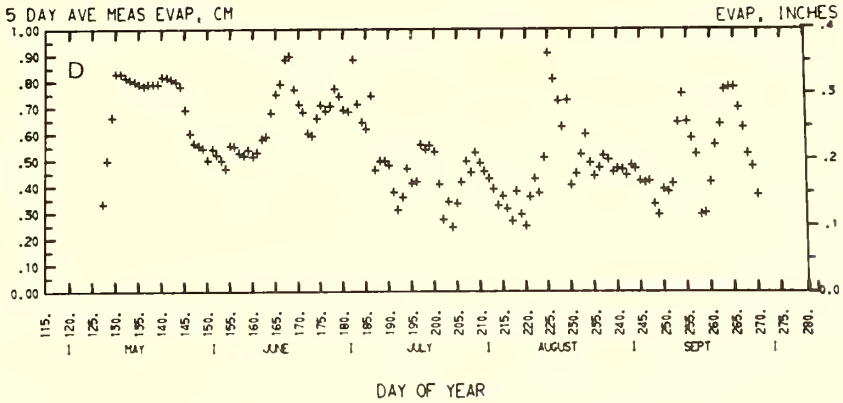
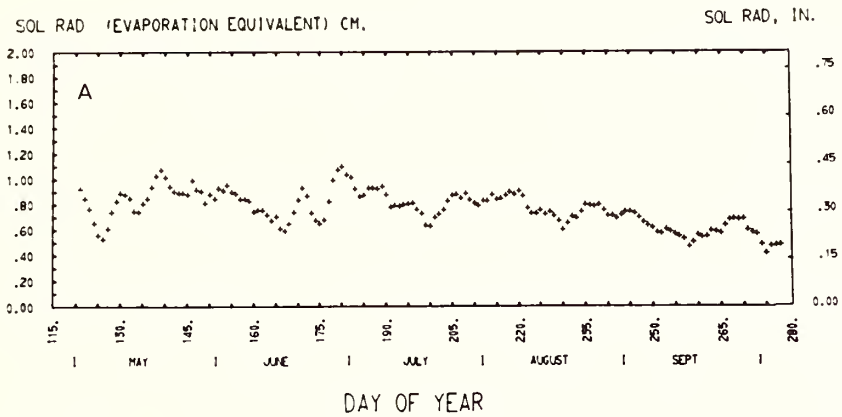
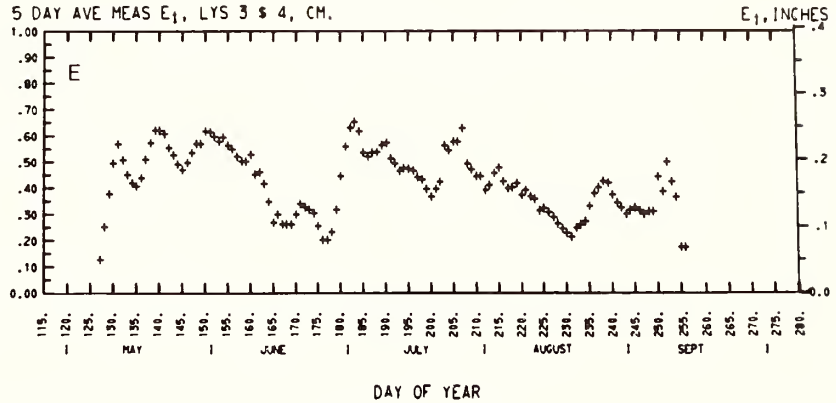
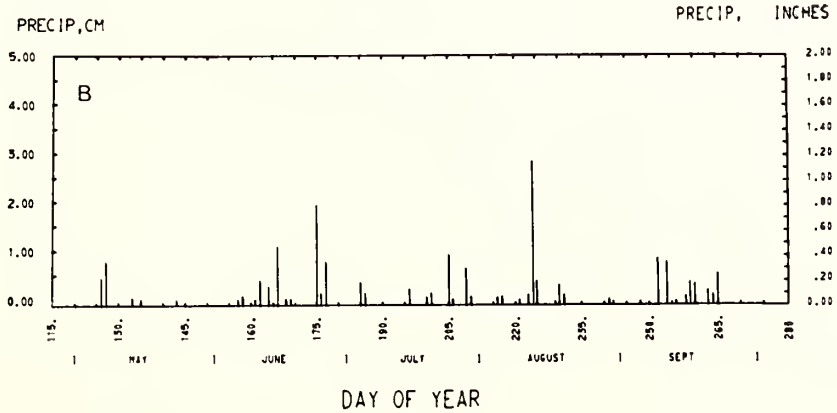
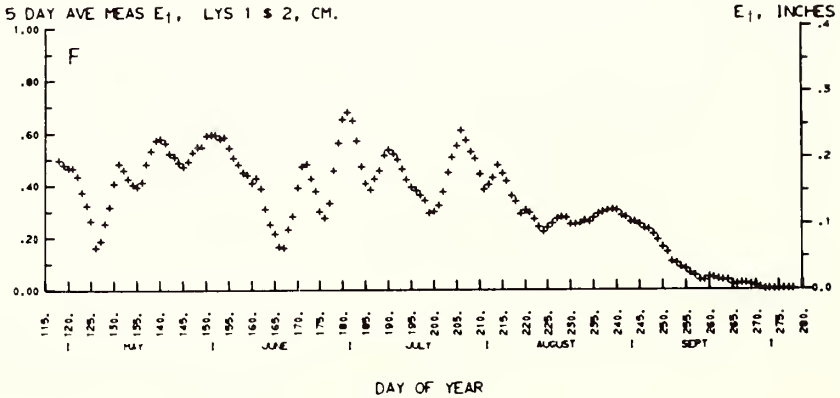


FIGURE 12.—Measured daily climatic and E_t data and estimated E_t for Garo, 1970. Plots A, D, E, F, G are smoothed by means of a 5-day running average.









See legend below.

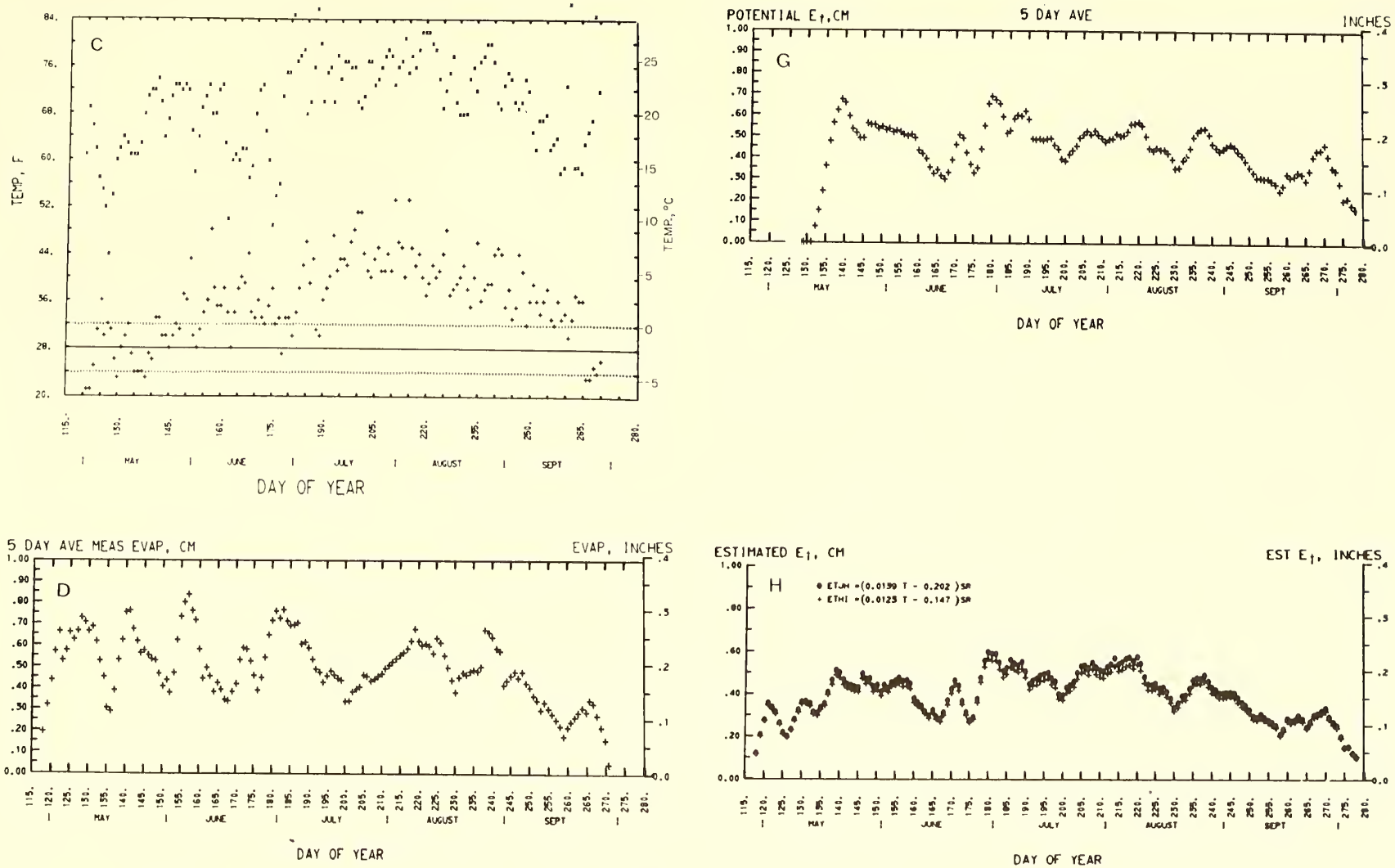
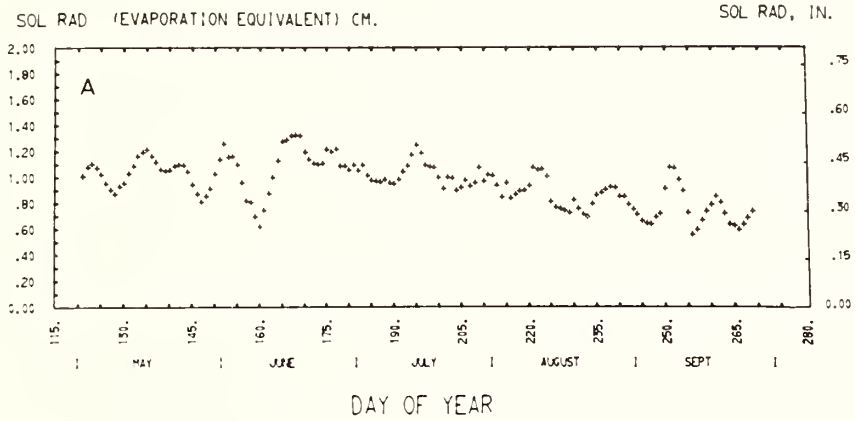
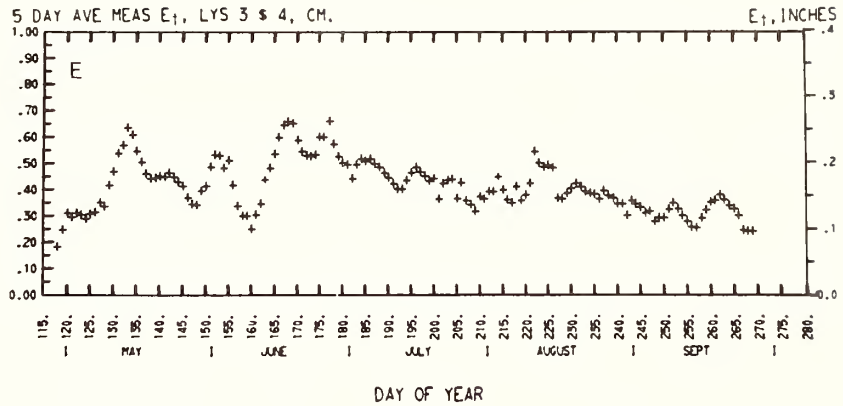
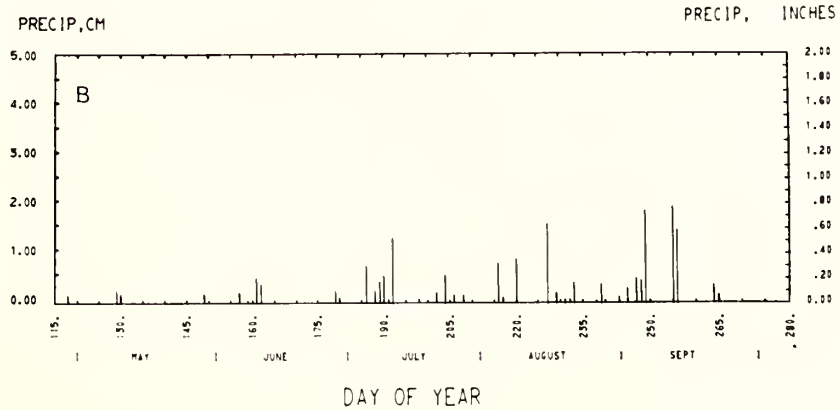
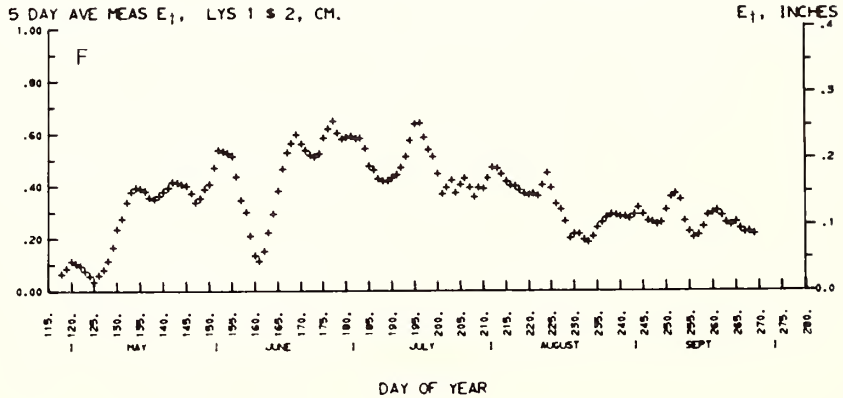


FIGURE 13.—Measured daily climatic and E_t data and estimated E_t for Gunnison, 1969. Plots A, D, E, F, G, H are smoothed by means of a 5-day running average.









See legend below.

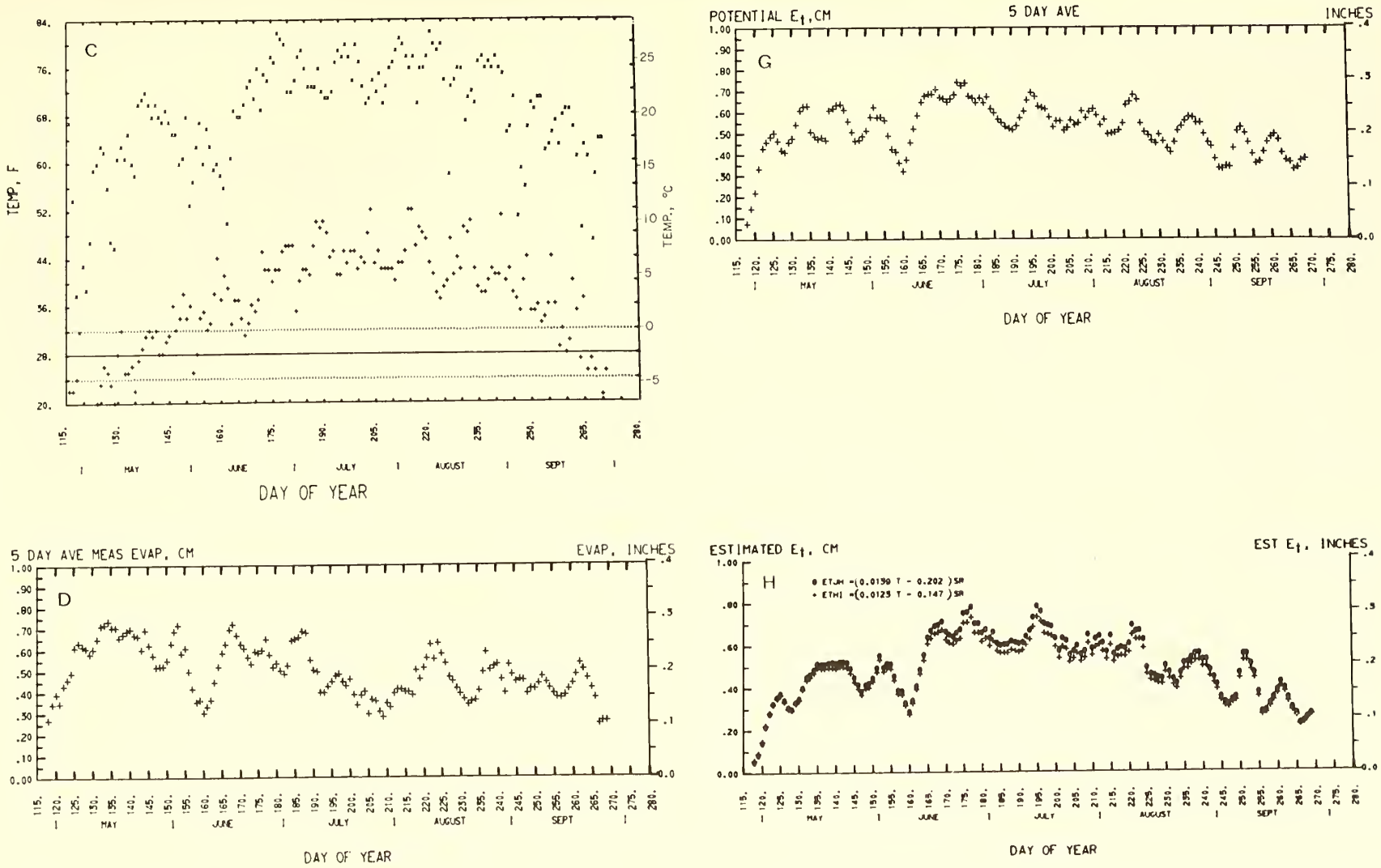


FIGURE 14.—Measured daily climatic and E_t data and estimated E_t for Gunnison, 1970. Plots A, D, E, F, G, H are smoothed by means of a 5-day running average.

with plant growth. Seimer and Heermann indicate that 40° F. may be an acceptable threshold temperature, below which plant growth is negligible.

A typical curve of weekly degree-days (40° F. threshold) was generated for 6 years of record at the Gunnison Mountain Meadow Research Center. This curve can then be compared with the measured values for the years of E_t measurement (figs. 15-17). Deviations from the average curves in individual years may help explain the variations in seasonal E_t for the years of measurement.

The plots of weekly sums of degree-days give an indication of length of growing season (figs. 15-17). Beginning and ending dates of the season, when the weekly degree-day curve extrapolates to zero, are listed in table 1. During the 6 years of record at the Mountain Meadow Research Center, the average beginning date of degree-day accumulation was May 1; the average ending date, October 3. Year-to-year variation in the beginning and ending dates was about 14 days. The indicated growing season length was 155 days. Degree-day plots should give more reliable indications of growing season length for meadow grasses than minimum temperature measurements, because they give less weight to short-term cold spells.

E_t seasons of May 1 to October 1 (153 days) were assumed for Gunnison and Garo on the basis of the temperature plots, degree-day plots, observations of vegetation, and measured water-use values. Early and late season use may consist more of evaporation from the soil surface than of transpiration, even though green leaves exist throughout the full period.

TABLE 1. — Beginning and ending days of growing season, based on weeks when 40° days go to (or near) zero, Mountain Meadow Research Center, Gunnison, Colo.

Year	Calendar day of year		Season length
	Start	*End*	*Days*
1966	115	277	162
1967	116	280	164
1968	130	280	150
1969	116	280	164
1970	129	272	143
1971	120	266	146
Average[1]	121	276	155

[1]155-day season, May 1 to Oct. 3.

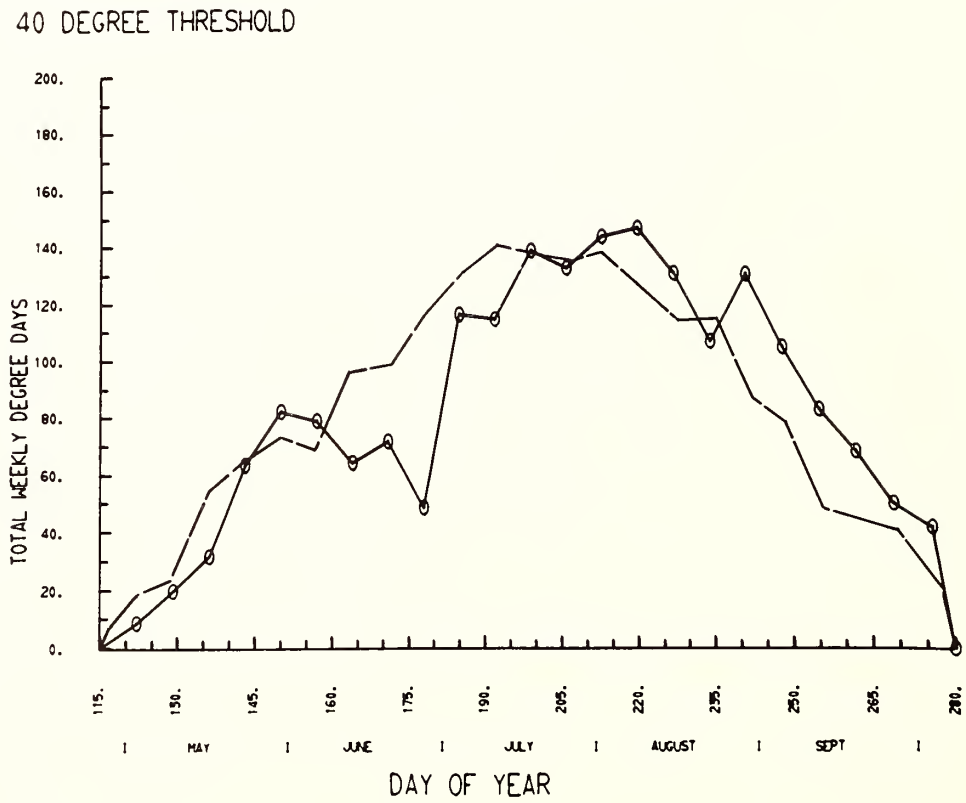


FIGURE 15.—Weekly degree-days (40° F. threshold), Gunnison Mountain Meadow Research Center, 1969. Broken line shows average degree-days for 6-year period, 1966-71.

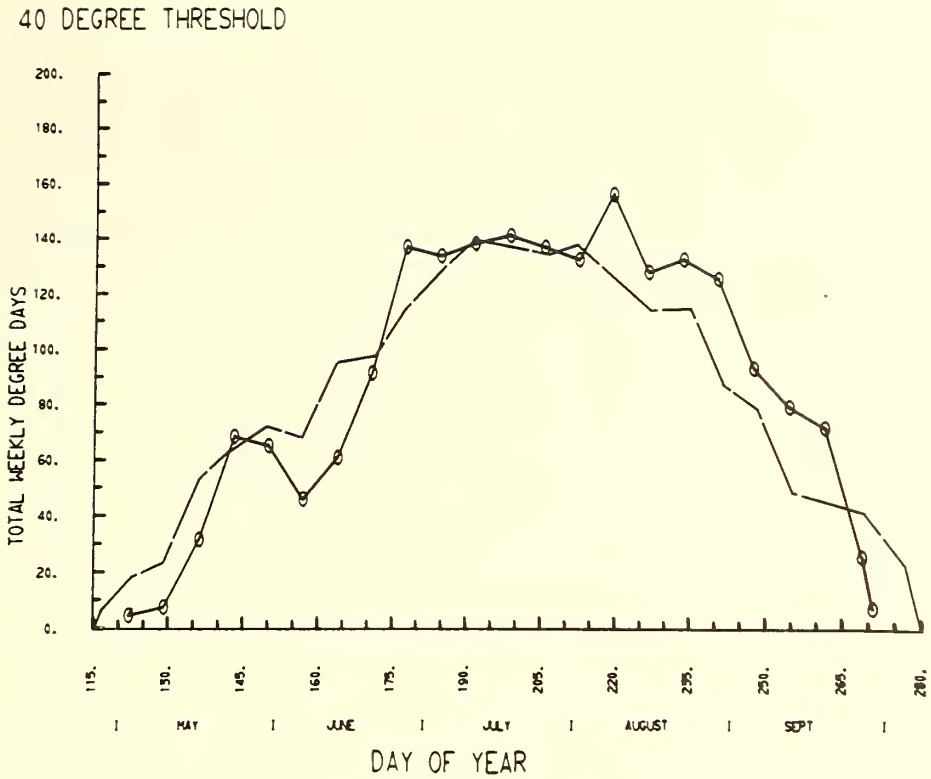


FIGURE 16.—Weekly degree–days (40° F. threshold), Gunnison Mountain Meadow Research Center, 1970. Broken line shows average degree-days for 6-year period, 1966-71.

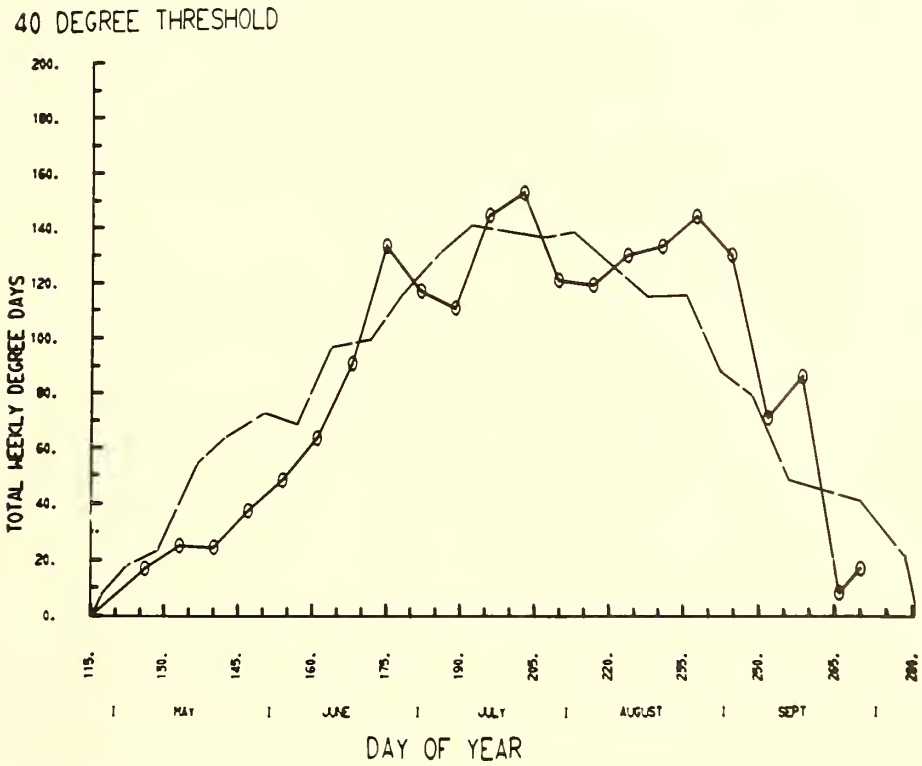


FIGURE 17.—Weekly degree–days (40° F. threshold), Gunnison Mountain Meadow Research Center, 1971. Broken line shows average degree-days for 6-year period, 1966-71.

RESULTS

Measured E_t

Seasonal values of evaporation, E_t, and precipitation for the full periods of measurement, which were different each year near Garo during the 1968, 1969, and 1970 seasons, and near Gunnison during 1969 and 1970, are shown in table 2. Measurement periods differed because of weather conditions that prevented early placement of E_t tanks in the spring or terminated measurements when the tanks were inundated with rain or snow or frozen in the fall. The values listed include rainfall received plus reservoir withdrawal. Ratios of measured seasonal E_t to evaporation are also listed in table 2. These ratios varied from 0.74 to 0.86.

Table 3 gives data for the 135-day interval from May 16 through September 30 (an interval when measured data were available for all years and sites), so that differences between seasons can be compared. Total seasonal evaporation for this period varied from 50.3 to 57.9 cm. (19.8 to 22.8 inches) at Garo, and 53.3 to 70.6 cm. (21.0 to 27.8 inches) at Gunnison.

TABLE 2.—Measured seasonal E_t in mountain meadows near Garo and Gunnison, Colo.

Location and year	Altitude		Period of measurement	Evaporation class A pan		Precipitation		Evapotranspiration from E_t tanks		Ratio of E_t to class A pan evaporation
	Meters	*(feet)*		*Centimeters*	*(Inches)*	*Centimeters*	*(Inches)*	*Centimeters*	*(Inches)*	
Garo:										
1968	2,780	(9,100)	May 7 to Oct. 21	76.1	(30.0)	15.8	(6.6)	[1]62.7	(24.7)	0.82
								[2]64.5	(25.4)	0.84
1969	2,780	(9,100)	May 29 to Oct. 3	60.6	(23.9)	20.3	(8.0)	[1]44.8	(17.7)	0.74
1970	2,780	(9,100)	May 8 to Sept. 29	79.3	(31.2)	22.8	(9.0)	[1]59.0	(23.2)	0.74
Gunnison:										
1969	2,420	(7,950)	May 9 to Sept. 9	65.5	(25.8)	15.8	(6.2)	[3]53.8	(21.2)	0.82
1970	2,420	(7,950)	Apr. 28 to Sept. 28	75.9	(29.9)	18.6	(7.3)	[2]62.9	(24.8)	0.83
1971	2,420	(7,950)	May 1 to Sept. 27	82.1	(32.3)	20.2	(8.0)	[1 4]70.6	(27.8)	0.86

[1] Unfertilized.
[2] Fertilized.
[3] September values estimated.
[4] Average of 5 E_t tanks.

TABLE 3.—Measured seasonal E_t in mountain meadows, adjusted to a common time interval, near Garo and Gunnison, Colo.

Location and year	Altitude		Period of measurement	Evaporation class A pan		Precipitation		Tank E_t	
	Meters	*(Feet)*		*Centimeters*	*(Inches)*	*Centimeters*	*(Inches)*	*Centimeters*	*(Inches)*
Garo:									
1968	2,780	(9,100)	May 16 to Sept. 30	66.8	(26.3)	15.9	(6.2)	[1]55.8	(22.0)
								[2]57.9	(22.8)
1969	2,780	(9,100)	.....do.....			20.2	(8.0)	[1]50.3	(19.8)
1970	2,780	(9,100)	May 16 to Sept. 29	73.3	(28.9)	22.8	(9.0)	[1]54.7	(21.5)
Gunnison:									
1969	2,420	(7,950)	May 16 to Sept. 30	67.4	(26.5)	18.6	(7.3)	[2 3]53.3	(21.0)
1970	2,420	(7,950)	May 16 to Sept. 28	65.5	(25.8)	18.0	(7.1)	[2]55.6	(21.9)
1971	2,420	(7,950)	May 16 to Sept. 27	82.1	(32.3)	20.2	(8.0)	[1 4]65.2	(25.7)

[1] Unfertilized.
[2] Fertilized.
[3] September values estimated.
[4] Average of 5 E_t tanks.

Growing Season E_t

Table 4 contains values of E_t for average 153-day growing season (May 1 to October 1) for each year at each location. Measured daily E_t amounts were used to obtain these values when available. It was sometimes necessary to estimate daily E_t during the early and late portions of the season if measured E_t was not available. The estimated E_t was based on measurements on the same date for other years, measurements at other locations, and correlations with measured solar radiation. The estimates involved small portions of the seasonal values because the periods without measurement were short and occurred when E_t rates were low. Lengths of the period of estimates can be determined from Appendix I as the number of days for which measured values are missing.

A net seasonal irrigation water requirement can be computed for each of the years of the study. The net irrigation requirement is equal to total seasonal E_t less measured precipitation. The net requirement, modified by an appropriate irrigation efficiency for the field to be irrigated, would represent the amount of water to be diverted to the field to satisfy fully the water needs of the crop. The net requirement is the amount of irrigation water used consumptively by the crop. Irrigation requirements, computed on this basis, were 43.2, 42.9, and 44.2 cm. (17.0, 16.9, and 17.4 inches) for Garo and 45.5, 49.0, and 54.8 cm. (17.9, 19.3, and 21.6 inches) for Gunnison. Higher or lower irrigation requirements could occur during seasons with extremely high or low growing season precipitation.

TABLE 4.—May 1 to September 30 E_t and evaporation

Location and year	E_t[1]		Class A pan evaporation[1]	
	Centimeters	*(Inches)*	*Centimeters*	*(Inches)*
Garo:				
1968	59.5	(23.6)	70.6	(27.8)
1969	58.9	(23.2)	74.4	(29.3)
1970	62.2	(24.5)	83.2	(32.8)
Gunnison:				
1969	59.6	(23.5)	76.2	(30.0)
1970	62.4	(24.6)	74.1	(29.2)
1971	70.5	(27.8)	78.5	(30.9)

[1]Tabulated values are based on measured data when available. Some increments at beginning and end of growing season are estimated.

Effect of Altitude on Seasonal E_t

Figure 18 contains a plot of growing season E_t as it is related to altitude. Several points are values that were computed from measured E_t rates reported by Grable and others *(4)* from May 22 to October 8 in 1964, at various locations in the Gunnison River drainage. Other points were obtained by Blaney *(13)* and the California Department of Water Resources *(3)* at similar latitudes and altitudes. The other points on figure 18 represent the 1968-70 data presented in this paper for the May 16-September 30 season.

Seasonal use at South Park follows the same relation to altitude as was established by the 1964 data of Grable and others *(4)*. However, less seasonal E_t was measured at Gunnison in 1969 and 1970 than would be forecast by this relation. The reason for the Gunnison site, at 2,420 m., showing little more E_t than South Park, at 2,780 m., is not known. Gunnison and South Park received equivalent amounts of solar radiation during comparable periods in 1970.

Analysis of degree-days may help explain some of the variation in measured seasonal E_t. Accumulated degree-days for the 6 years of record at the Gunnison sites are listed in table 5. The years of E_t measurement, 1969-71, are shown to be somewhat warmer than the preceding 3 years. There is no correlation between measured seasonal E_t and total growing season degree-days for this study.

TABLE 5.—Total seasonal degree-days at Mountain Meadow Research Center, Gunnison, Colo.

Year	Degree-days
1966	[1]1,707
1967	1,869
1968	1,652
1969	1,880
1970	1,964
1971	1,860

[1]May 17 through September 26.

Effective Precipitation

The study of effective precipitation was prompted by indications in the 1968 data, that small amounts of rainfall caused the demand for water from the reservoirs to cease for several hours. The degree of effectiveness could not be determined because there was no way of knowing what the use would have been if the tanks had not received the rainfall. For many storms, demand from the reservoirs apparently stopped before the beginning of measurable precipitation. This indication may be due to poor synchronization of recorder clocks.

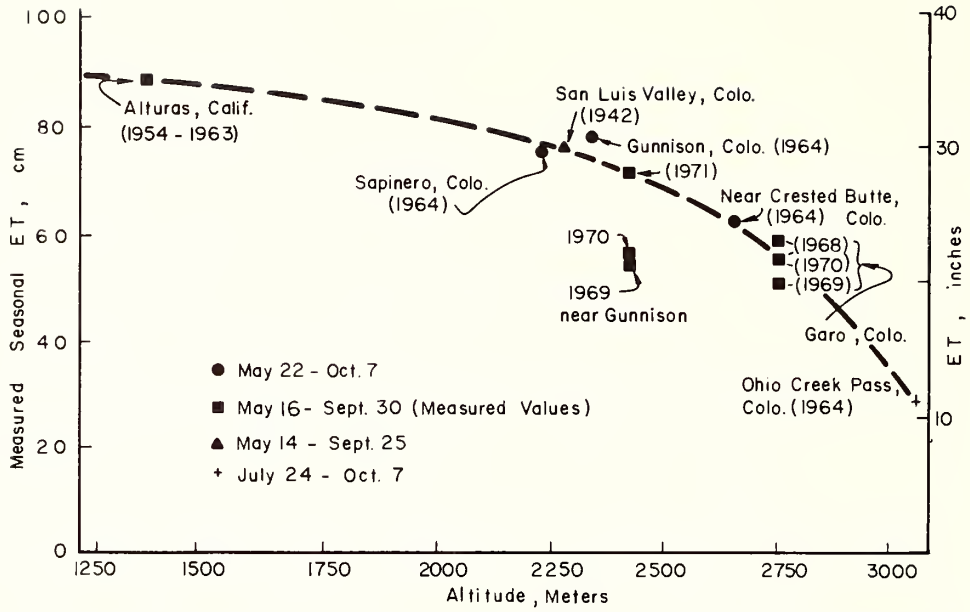


FIGURE 18.—Effect of altitude on measured E_t of grass in Colorado and California.

However, the consistency suggests that conditions of high humidity and low solar radiation immediately before storms may cause E_t and evaporation to cease several minutes before rainfall begins.

The sheltered E_t tanks at the Gunnison site were those that were automatically covered during rainstorms. Water used from these tanks was therefore supplied only from the reservoirs. A graph of temporal distribution of rainfall and associated demand for water from the reservoirs for sheltered and unsheltered tanks is shown in figure 19.

Water use from the sheltered and unsheltered tanks is compared in table 6. The sheltered tanks showed less water withdrawal from the reservoirs than the unsheltered tanks for the same period, because all water supplied was 100 percent effective, not partially effective as was the precipitation falling in the unsheltered tanks. The precipitation effectiveness is defined as the fraction of the precipitation received which is apparently effective in reducing the need for irrigation water. Effective precipitation was determined as the difference in water withdrawn from the reservoirs of the covered and uncovered tanks divided by the total precipitation received. It can be calculated on a daily basis or for longer periods of time.

Tables 7 and 8 contain values of precipitation effectiveness for individual storms in Gunnison.

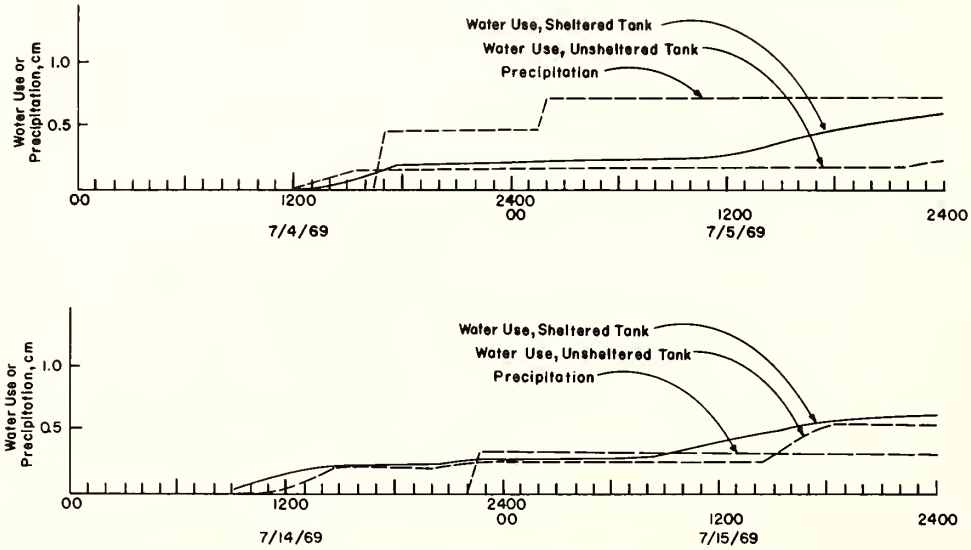


FIGURE 19.—Precipitation and rates of water withdrawal from reservoirs for typical small storms in Gunnison.

Storms resulting in less than 0.5 cm. (0.20 inches) precipitation averaged 52 percent effective in 1969 and 42 percent effective in 1970. Figure 20 shows precipitation amounts and effectiveness. Scattering of the data prevents any conclusions as to the relation between amount and effectiveness.

Precipitation effectiveness was 74 percent on a seasonal basis in 1969. The high seasonal values are an indication of the greater effectiveness of large storms which carry more weight in the averages.

In April and early May of 1970, the rain shelters were found to be shading two of the tanks during late afternoon, reducing water use. Thus precipitation effectiveness could not be measured during this period. Excluding April and May, when only 0.75 cm. (0.30 inch) precipitation occurred, 80 percent of all growing season rainfall was effective in reducing irrigation water demand.

A check of Gunnison precipitation records for the past 15 years showed May through September totals varying from 6.3 to 21.5 cm. (2.49 to 8.48 inches) with an average of 13.6 cm. (5.36 inches). If we assume that this precipitation is 75 percent effective in satisfying the water requirements of the crops, that runoff is negligible, and that the seasonal potential E_t is independent of rainfall amounts; the seasonal irrigation water demand could vary 5.7 cm. (2.25 inches) above or below the mean, about a 10 percent variation. If it is assumed, as is probable, that potential E_t is lowered in years of high precipitation, the variation in irrigation demand could be even greater.

The use of sheltered and unsheltered tanks to determine precipitation effectiveness assumes that both sets of tanks use water at the same rates during periods of no rainfall. Figures 21 and 22 show a comparison of such water use at Gunnison in 1969 and 1970. Comparisons are based on averages from rain-free periods of 2 to 7 days in length. In 1969, the unsheltered tanks used about 10 percent more water than the sheltered, on the average. In 1970, sheltered and unsheltered use was nearly the same, with slightly greater use from the sheltered tanks.

If, in 1969, use from the sheltered tanks was consistently low, correcting it to higher values during periods of rainfall would increase the calculated difference in withdrawal from the reservoirs during rainy periods which would, in turn, increase the calculated precipitation effectiveness.

TABLE 6.—Seasonal water use from sheltered and unsheltered E_t, tanks, Gunnison, Colo.

Year	Period of measurement	Tank E_t Sheltered	Tank E_t Unsheltered
		Centimeters (Inches)	*Centimeters (Inches)*
1969	May 16 to Sept. 30	47.0 (18.5)	53.3 (21.0)
1970	May 16 to Sept. 28	51.5 (20.3)	55.6 (21.9)

TABLE 7.—Precipitation effectiveness of small storms, Gunnison, 1969

Date	Precipitation	Δ Use[1]	Effectiveness
	Millimeters	*Millimeters*	*Percent*
May 13–15	2.3	0.5	22
23	1.0	.5	50
June 6–7	2.8	1.6	57
July 4–5	7.1	3.7	52
15	3.3	.7	21
19–20	4.1	.5	12
28–29	9.1	7.4	81
Aug. 3–4	3.3	2.8	85
28–29	2.5	1.5	60

[1]Difference in use between sheltered and unsheltered E_t tanks.

TABLE 8.—Precipitation effectiveness of small storms, Gunnison, 1970

Date	Precipitation	ΔUse[1]	Effectiveness
	Millimeters	*Millimeters*	*Percent*
May 9–10	4.3	0.8	19
29	1.8	1.8	44
June 28–29	3.6	2.5	69
July 17	.8	.3	38
Aug. 26–28	4.3	1.8	42
Sept. 2	3.0	1.5	50
21–22	5.1	1.5	29

[1]Difference in use between sheltered and unsheltered E_t tanks.

Hay Yields

The E_t tanks and surrounding meadows were mowed once each year on the study sites. Vegetation from the tanks was air dried, weighed, and the weights converted to equivalent yields (table 9). Yields were higher on fertilized than on unfertilized tanks. There was little difference in yields from the sheltered and unsheltered tanks at Gunnison.

Soil Temperatures

Temperatures were recorded continuously during two seasons at Gunnison from sensors located at three positions relative to the E_t tanks. The top sensor was on the soil surface just outside the

tanks. Thus, it was inundated during the times the meadow was being irrigated. Except for early 1969 and after harvest each year, it was shaded from direct sunlight by surrounding grasses.

The second and third sensors were located in the sod of one tank at depths of 5 and 15 cm. (2 and 6 inches) below the soil surface.

Maximum and minimum daily soil temperatures are plotted in figures 23 and 24. Indicated surface temperatures varied widely early in 1969 and after

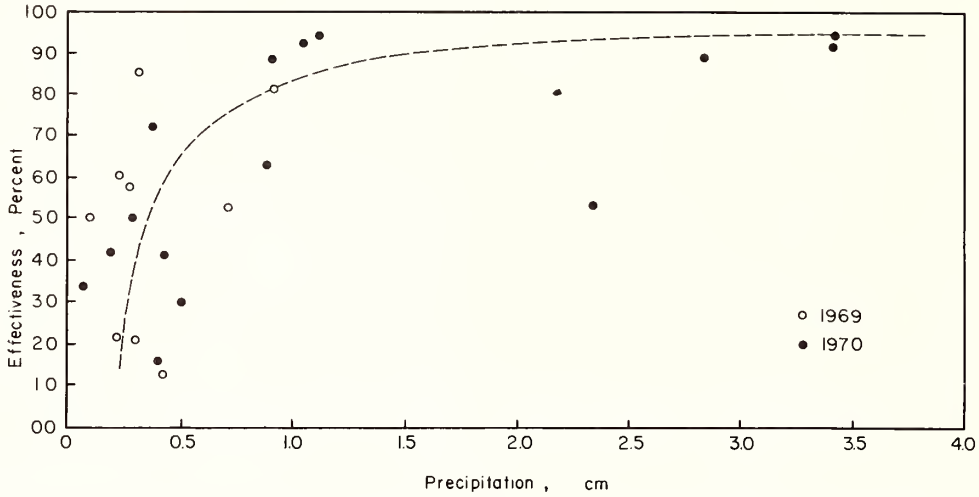


FIGURE 20.—Precipitation effectiveness of individual storms, Gunnison, 1969 and 1970.

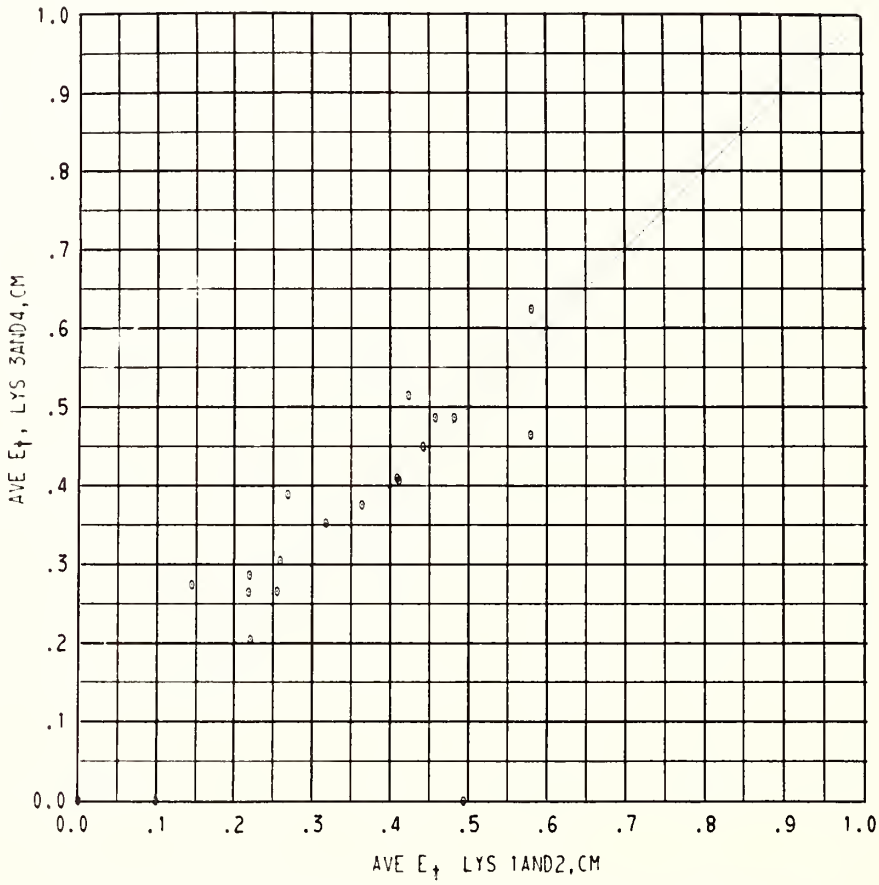


FIGURE 21.—Average daily E_t for periods of no rainfall, Gunnison, 1969.

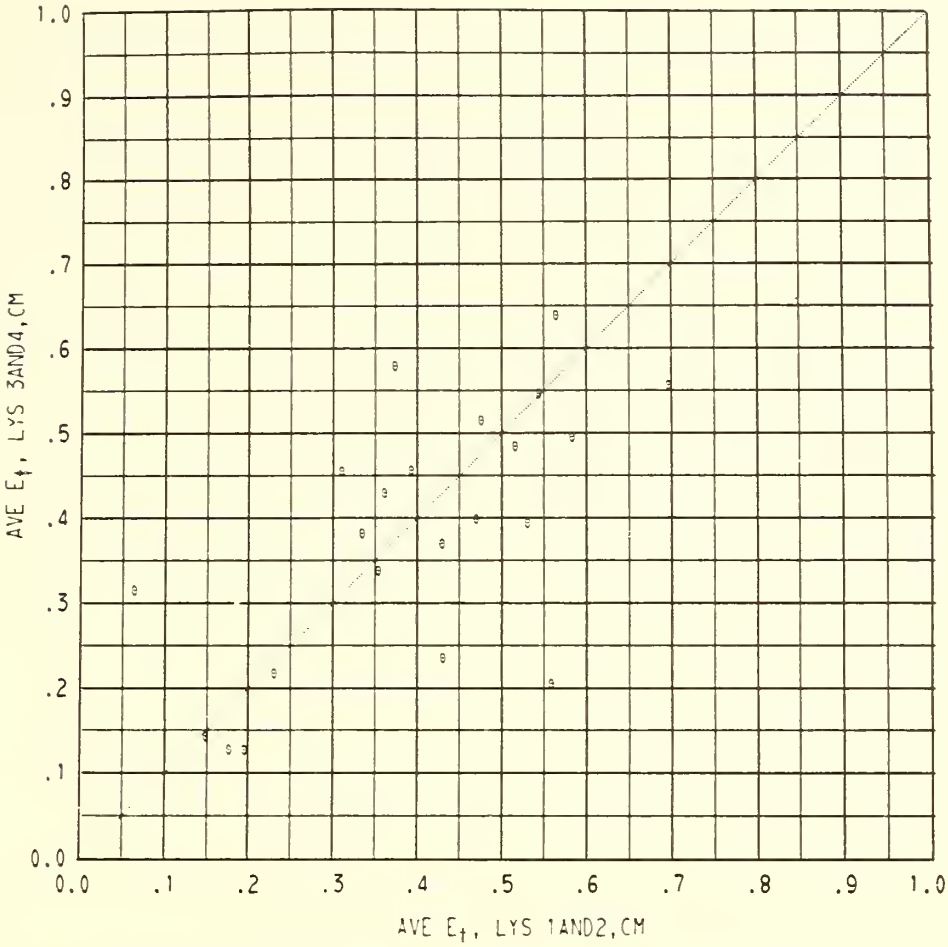


FIGURE 22.—Average daily E_t for periods of no rainfall, Gunnison, 1970.

harvest when short vegetation provided little shading or insulation. During the interval, May 25 to harvest, temperatures varied through a narrower range (about 10°C. in 1970). Temperatures were about the same during and between irrigations, indicating that the surface irrigation water had warmed to air temperature by the time it reached the tanks.

TABLE 9.—Hay yields from E_t tanks, Mountain Meadow Research Center, Gunnison, Colo.

Location	Harvest date	Tanks	Yield (air dry)	
			Kilograms per hectare	*(Tons per acre)*
South Park	8–16–68	[1]1, 2	5,950	(2.65)
Do.....	....do....	[2]3, 4	4,110	(1.83)
Do.....	8–6–69	[2]1, 2	2,650	(1.18)
Do.....	8–13–70	[2]1, 2	5,120	(2.28)
Gunnison	8–5–69	[1]1, 2	6,470	(2.88)
Do.....	....do....	[1]3, 4	6,490	(2.89)
Do.....	8–14–70	[1]1, 2	4,540	(4.04)
Do.....	....do....	[1]3, 4	5,100	(4.54)

[1]Fertilized.
[2]Unfertilized.

Temperatures at the 5- and 15-cm. (2- and 6-inch) soil depths varied less than surface temperature. Prior to harvest, variation averaged 4° C. at 5 cm. and 2° at 15 cm. After harvest, the reduced shading caused average soil temperature, as well as the diurnal variation, to increase. Diurnal fluctuations were slightly less in 1970 than in 1969, partly due to a better established grass cover, and partly due to the increased water table elevation maintained in 1970.

Estimating Rates of E_t

To generalize the results of this study, several equations were evaluated which make use of measured climatic variables to estimate E_t. Some of these equations have been published previously by other authors; other equations were derived on

the basis of data obtained from this study. To be most useful, estimating equations must use the most easily measured climatic variables, preferably those regularly recorded at small U.S. Weather Bureau stations. There is extreme variability in topography, airmass circulation, and cloud conditions in mountain terrain. Therefore, climatic measurements should be taken near the area to which they are to be applied.

Table 10 contains estimates of monthly and seasonal potential E_t as estimated by the modified Penman equation (equation 2), neglecting the soil heat-flux term. Values listed are sums of daily estimates and have not been adjusted by crop factors. They represent potential water use by an actively growing, well-watered, short-grass crop. Equation 2 generally overestimated measured E_t, both monthly and seasonal values. Occasionally, in June or July, measured values matched equation 2 estimates quite closely. These were the months when the crop was growing vigorously and the water use rate would be expected to be near potential. In April, early May, and in August, following harvest, the area of leaf surface or vigor of growth were apparently not adequate to support E_t at the potential rate.

Over the 3-year course of this study, total measured Class A pan evaporation has been almost identically equal to estimated potential E_t. However, yearly totals have varied up to 10 percent.

The ratio of seasonal uncorrected potential E_t estimated by the modified Penman equation to measured E_t ranged from 1.13 to 1.32 for the seasons studied. Estimating seasonal E_t as 87.5 percent of calculated potential would have resulted in maximum errors less than 10 percent.

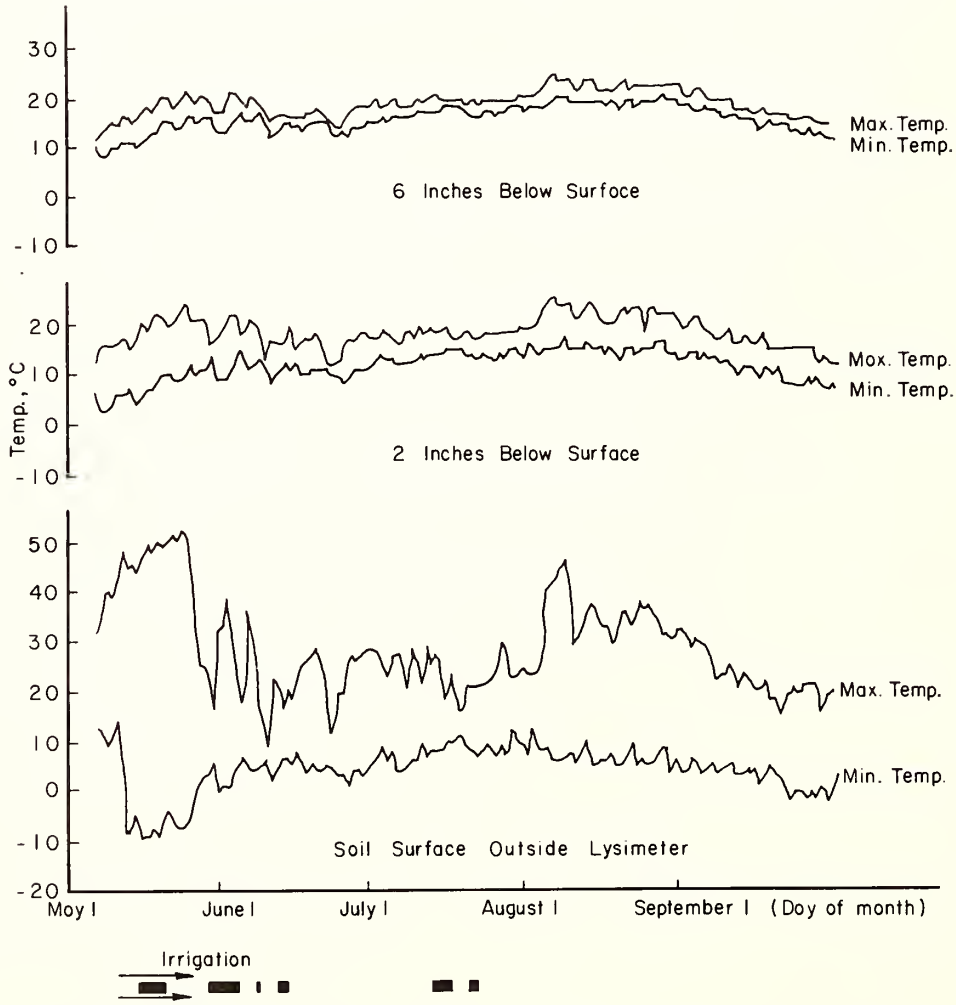


FIGURE 23.—Temperature variation through 1969 growing season on tank 4, Gunnison. Sensors were located on soil surface just outside the tank and 5 and 15 cm. (2 and 6 inches) below surface in the tank. During periods of irrigation (indicated by solid bars), the latter measurement represents irrigation water temperature.

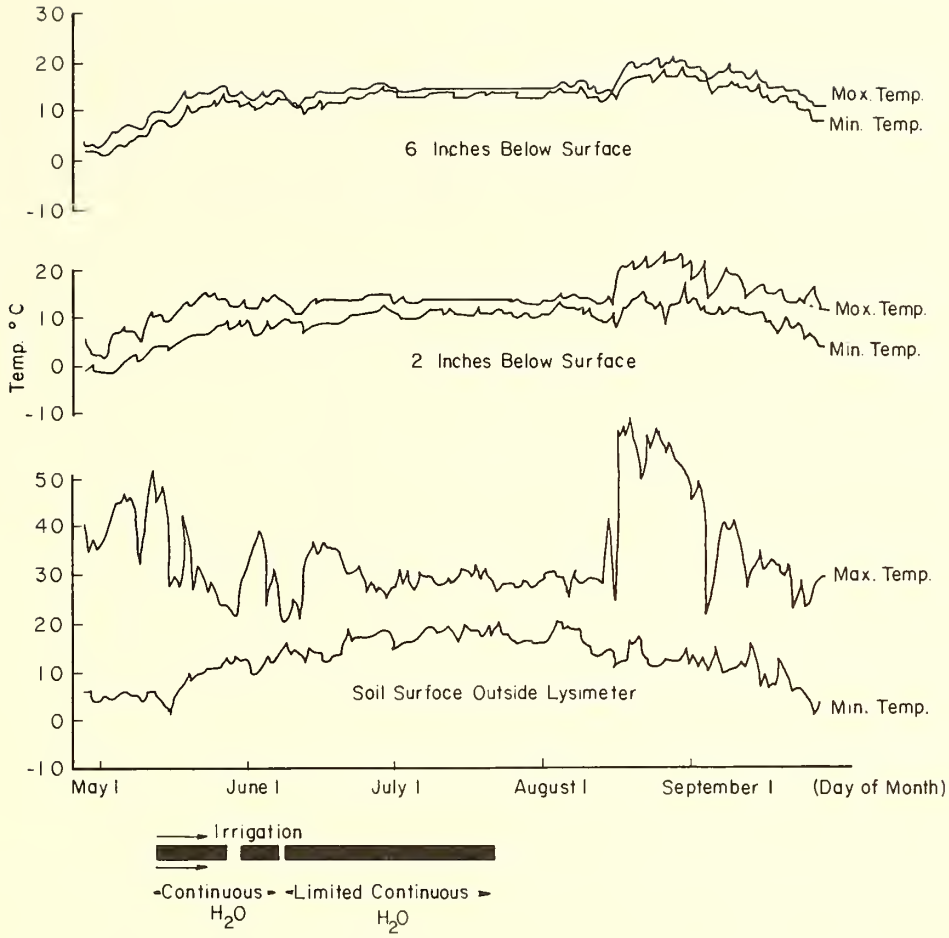


FIGURE 24.—Temperature variation through 1970 growing season on tank 3, Gunnison. Sensors were located on soil surface just outside the tank and 5 and 15 cm. (2 and 6 inches) below surface in the tank. During periods of irrigation (indicated by solid bars), the latter measurement represents irrigation water temperature.

Under the conditions of this study, the need for modifying potential should not be as great as it would be under conditions of deep water table and infrequent irrigations. In this study, the water table was always maintained high enough to keep soil surface damp. Therefore, during times when vegetative development is not adequate to transpire water at potential rates, evaporation should at least partly compensate.

Estimates of E_t were computed using the Jensen-Haise equation (equation 3) for all years of measurement in this study and are listed in table 10. Estimates were significantly low, generally less than 75 percent of measured values.

On the basis of our 1968 South Park data, Jensen and others *(7)* proposed altitude corrections for equation 3, to compensate for apparent changes in temperature-net radiation relationships at high elevations. The corrected equations, for altitudes corresponding to the South Park and Gunnison expermental sites, are:

At 2,780 m. (9,100 feet):

$$E_t = (0.014T - 0.194)\ R_s \qquad (5a)$$

At 2,420 m. (8,000 feet):

$$E_t = (0.0139T - 0.202)\ R_s \qquad (5b)$$

E_t estimates from equation 5 are also listed in table 10. These estimates are also within 10 percent of measured values on a seasonal basis, except for Gunnison in 1970, when equation 5 overestimated measured E_t by 23.5 percent.

An equation of the same form as equation 3, but derived from a regression analysis of the 1968 South Park data is:

$$E_t = (0.0123T - 0.147)\ R_s \qquad (6)$$

Estimates using this equation for other years' data are also listed in table 10. The equation gives good estimates for 3 of 4 years' measured data. In 1970,

TABLE 10.—Comparison of measured and estimated evaporation and evapotranspiration

Date and place	Measured E_t		Measured evaporation		Estimated[1] potential E_t		E_t[2] Jensen-Haise		E_t[3] Jensen-Haise w/alt. corr.		E_t[4] 1968 So. Park equation		E_t[5] Blaney-Criddle	
	Centimeters	*(Inches)*	*Centimeters*	*(Inches)*	*Centimeters*	*(Inches)*	*Centimeters*	*(Inches)*	*Centimeters*	*(Inches)*	*Centimeters*	*(Inches)*	*Centimeters*	*(Inches)*
Garo–Site 1–1968:														
May 14–31	5.11	(2.01)	8.13	(3.20)	9.78	(3.85)	3.94	(1.55)	7.14	(2.81)	6.72	(2.65)	5.77	(2.27)
June	17.70	(6.97)	17.36	(6.83)	20.42	(8.04)	11.35	(4.47)	17.18	(6.76)	15.87	(6.25)	16.26	(6.40)
July	16.03	(6.31)	16.08	(6.33)	16.10	(6.34)	11.12	(4.38)	16.04	(6.31)	14.74	(5.80)	19.96	(7.86)
August	8.91	(3.51)	10.92	(4.30)	13.93	(5.48)	9.29	(3.66)	13.93	(5.48)	12.86	(5.06)	16.38	(6.45)
September	10.02	(3.94)	14.38	(5.66)	13.17	(5.19)	5.45	(2.15)	9.41	(3.70)	8.79	(3.46)	12.70	(5.00)
October 1–21	5.14	(2.02)	6.78	(2.67)	7.63	(3.00)	2.00	(.79)	4.23	(1.67)	4.01	(1.58)	8.38	(3.30)
Total	62.91	(24.77)	73.65	(29.00)	81.03	(31.90)	43.15	(16.99)	67.93	(26.74)	62.99	(24.80)	79.45	(31.28)
Garo–Site 2–1969:														
May 16–31[6]	6.12	(2.41)			8.50	(3.35)	3.50	(1.38)	5.43	(2.14)	5.02	(1.98)	6.96	(2.74)
June	11.25	(4.43)	15.99	(6.30)	11.64	(4.58)	5.15	(2.03)	8.02	(3.16)	7.43	(2.93)	15.62	(6.15)
July	12.63	(4.97)	15.84	(6.24)	14.13	(5.56)	9.19	(3.62)	12.83	(5.05)	11.76	(4.63)	21.08	(8.30)
August	10.76	(4.24)	16.26	(6.40)	14.16	(5.57)	9.42	(3.71)	13.19	(5.19)	12.08	(4.76)	18.29	(7.20)
September	7.38	(2.91)	9.32	(3.67)	10.60	(4.17)	5.45	(2.15)	8.48	(3.34)	7.86	(3.09)	14.05	(5.53)
Total	48.14	(18.95)	57.41[6]	(22.61)	59.03	(23.24)	32.71	(12.88)	47.95	(18.88)	44.15	(17.38)	76.00	(29.92)
Garo–Site 2–1970:														
May 14–31	9.58	(3.77)	12.88	(5.07)	11.39	(4.48)	4.80	(1.89)	7.65	(3.01)	7.10	(2.80)	6.54	(2.57)
June	15.76	(6.20)	19.22	(7.57)	18.53	(7.30)	9.81	(3.86)	14.76	(5.81)	13.63	(5.37)	16.42	(6.46)
July	14.57	(5.74)	14.89	(5.86)	16.98	(6.69)	11.68	(4.60)	15.98	(6.29)	14.65	(5.77)	20.72	(8.16)
August	9.42	(3.71)	13.02	(5.13)	14.67	(5.78)	9.28	(3.65)	13.27	(5.22)	12.20	(4.80)	17.61	(6.93)
September	8.28	(3.26)	14.33	(5.64)	12.25	(4.82)	4.74	(1.87)	8.06	(3.17)	7.75	(3.05)	12.47	(4.91)
Total	57.61	(22.68)	74.34	(29.27)	73.82	(29.06)	40.31	(15.87)	59.72	(23.51)	55.33	(21.78)	73.76	(29.04)
Gunnison–Site 1–1969:														
May 14–31	9.50	(3.74)	9.10	(3.58)	9.68	(3.81)	5.18	(2.04)	7.78	(3.06)	7.39	(2.91)	6.60	(2.60)
June	11.57	(4.56)	16.37	(6.44)	13.73	(5.41)	8.22	(3.24)	12.23	(4.81)	11.60	(4.57)	15.90	(6.26)
July	15.63	(6.15)	15.68	(6.17)	15.54	(6.12)	11.39	(4.48)	15.48	(6.09)	14.50	(5.71)	21.18	(8.34)
August	10.79	(4.25)	16.99	(6.69)	14.71	(5.79)	10.68	(4.20)	14.55	(5.73)	13.62	(5.36)	18.72	(7.37)
September[7]														
Total	47.49	(18.70)	58.14	(22.89)	53.66	(21.13)	35.47	(13.96)	49.94	(19.66)	47.11	(18.55)	62.40	(24.57)

Gunnison–Site 1–1970:														
May	13.16	(5.18)	18.93	(7.45)	16.62	(6.54)	8.03	(3.16)	13.23	(5.21)	12.71	(5.00)	13.63	(5.37)
June	14.83	(5.84)	16.15	(6.36)	17.76	(6.99)	12.18	(4.80)	17.44	(6.87)	16.46	(6.48)	16.43	(6.47)
July	13.47	(5.30)	14.08	(5.54)	17.92	(7.06)	14.43	(5.68)	19.50	(7.68)	18.24	(7.18)	20.73	(8.16)
August	12.35	(4.86)	14.44	(5.69)	16.36	(6.44)	12.45	(4.90)	16.78	(6.61)	15.69	(6.18)	17.60	(6.93)
September	8.18	(3.22)	11.03	(4.34)	11.06	(4.35)	6.43	(2.53)	9.49	(3.74)	9.32	(3.67)	12.47	(4.91)
Total	61.99	(24.41)	74.63	(29.38)	79.72	(31.39)	53.52	(21.07)	76.44	(30.09)	72.42	(28.51)	80.86	(31.83)

[1] From modified Penman equation (equation 2).
[2] $E_t = (0.014\ T - 0.37)\ SR$.
[3] $E_t = (0.0140\ T - 0.194)\ SR$ for 9,100 feet altitude and $E_t = (0.0139\ T - 0.202)\ SR$ for 8,000 feet altitude, T in °F.
[4] $E_t = (0.0123\ T - 0.122)\ SR$, T in °F.
[5] Coefficients as determined by Blaney in San Luis Valley, Colo.
[6] May data missing because pan was not operating.
[7] September data omitted because rainfall prevented good lysimeter measurements.

measured use at Gunnison is overestimated by 17 percent.

Measured seasonal E_t varied from 74 to 86 percent of Class A pan evaporation. No more than two seasons' data were available for any one study site, but the ratio appears to be nearly constant for each site.

Measured E_t and evaporation, along with various estimates of seasonal E_t, are shown graphically in figure 25. Use of equation 6, based on the 1968 South Park measurements, gave the best estimates of E_t for the following years, of any method. Monthly totals, using this equation, frequently varied more than 20 percent from measured values. The equation tended to underestimate use early in the season, possibly because it does not account for advective energy components during this time of year when winds are high. Likewise, equation 6 consistently overestimated August E_t. Measured E_t was reduced in August as a result of harvesting hay grown in E_t tanks and because of more frequent precipitation events during this month.

Slow regrowth may also help account for August and September estimated E_t values frequently exceeding those measured.

Monthly values of E_t were estimated by the Blaney-Criddle equation,

$$E_t = \frac{ktp}{100} \qquad (1)$$

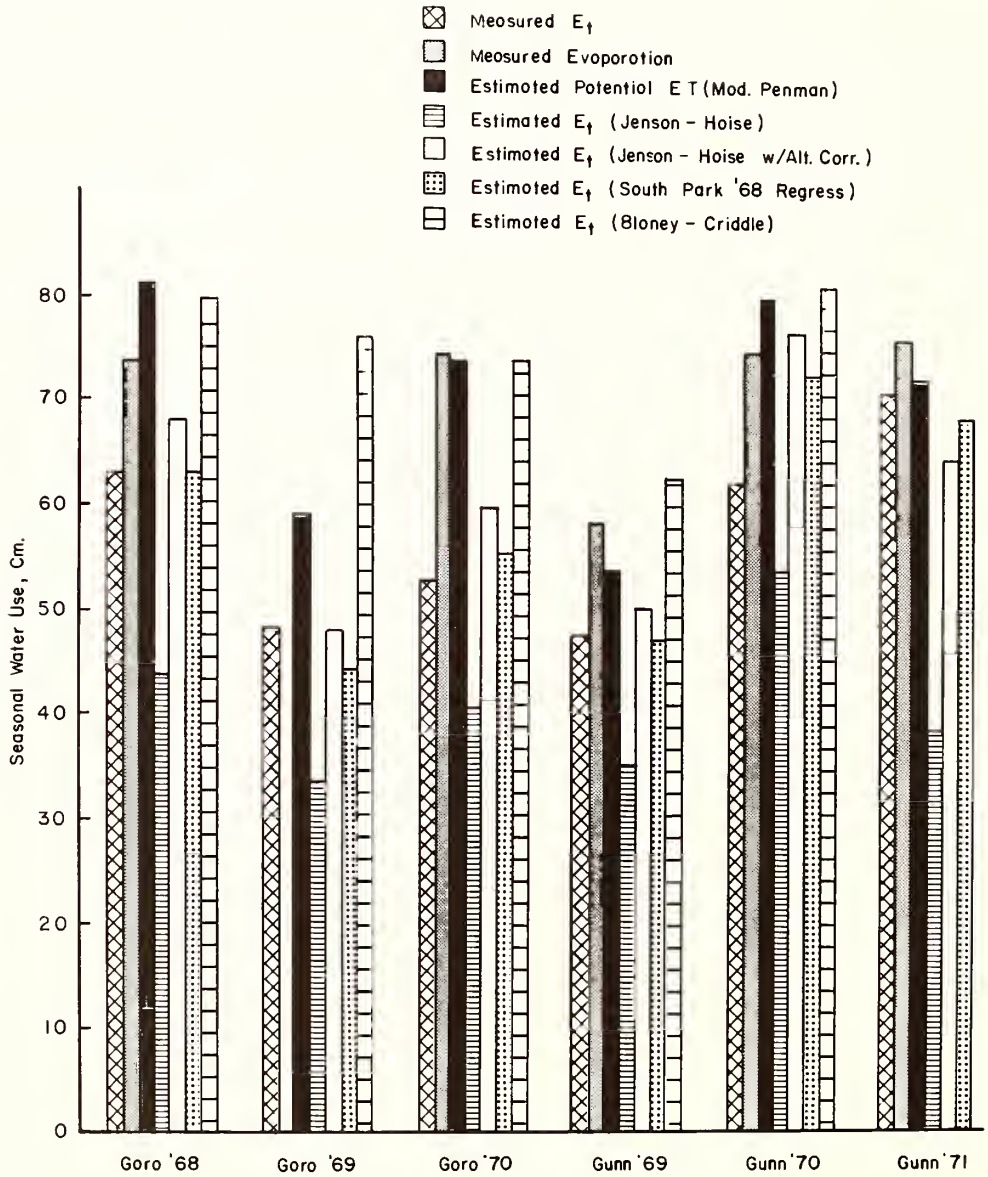


FIGURE 25.—Measured and estimated seasonal E_t.

Values of k, determined experimentally in the San Luis Valley of Colorado, were taken from Blaney[8].

Values of E_t estimated using this formula are listed in table 10. These estimates average 35 percent higher than measured values, with individual years varying from 26 to 58 percent. Blaney-Criddle estimates are reasonably good in most years for May and June. They would be expected to be high if used without correction in August because they do not account for reduced transpiration following haying. They are, also, unrealistically high in July and September.

Values of k for monthly Blaney-Criddle E_t estimates were calculated from the 6 years' measured E_t data. These values are listed in table 11. The May value of 1.12 may be somewhat unrepresentative, in that several years' data included less than a full month. Also, in August, no correction was made in measured E_t during the period immediately after harvest. Therefore, the low k values would be expected as they take account of the postharvest correction.

The computed values of k agree closely (± 10 percent) with those proposed by Blaney for wet mountain meadows in May and June. Computed values are much lower than Blaney's values in July, August, and September; the difference being as great as 60 percent in August.

TABLE 11.—Average monthly "k" values for mountain meadows, 1968-71

	May	June	July	Aug.	Sept.
Garo-68	0.768	1.372	1.125	0.713	1.065
Garo-69	1.013	.910	.838	.772	.710
Garo-70	1.207	1.208	.985	.701	.896
Gunnison-69	1.405	1.096	1.025	.766	—
Gunnison-70	1.169	1.098	.873	.857	.793
Gunnison-71	1.185	1.091	.978	1.101	1.183
Average....	1.124	1.129	.971	.818	.929

OUTLOOK

The current and future demands for water to supply municipal, industrial, and domestic needs has resulted in the sale of water rights at prices ranging from $500 to $1,000 per acre-foot per year or more. The results presented in this report should serve as a basis to establish an average value of E_t to which a given monetary value can be assigned. In areas where measured E_t or consumptive use values are not available, it may be necessary to establish a weather station to record the necessary climatic parameters to use the predictive equations presented in the previous section. Because of the extreme variability in atmospheric evaporative demand, and hence the rate of water use by wet meadows from year to year, one cannot categorically arrive at a fixed amount of water being evaporated by a meadow where E_t is at or near potential. This is particularly true in water-short areas where water is not available for irrigation during part of the season. But where an adequate supply is available and late-season water is applied following harvest and removal of hay, the measured seasonal value of E_t reported herein and summarized in the generalized E_t-altitude curve (fig. 18) and the prediction equations previously discussed can be used to provide a reasonable estimate of monthly or seasonal E_t. If solar radiation measurements are not available, weather bureau temperature records can be used in the Blaney-Criddle method for estimating E_t providing the coefficients k (see equation 1) developed from E_t tank measurements (table 11) are used.

Since beneficial use of irrigation water is defined as difference between the seasonal E_t and rainfall, one might ask if effectiveness of precipitation would influence that fraction of irrigation water beneficially used. For example, if a wet meadow uses 60 cm. (23.6 inches) of water annually, and if 15 cm. (5.9 inches) of rainfall is received during the growing period, the beneficial use of irrigation water and the amount salable is equal to 45 cm. (17.7 inches). But suppose the rainfall is only 50 percent effective. Does that mean that the fraction of irrigation applied and used by the crop is 52.5 cm. rather than 45 cm., and should the owner be paid for 52.5 cm.? The answer is no, because in this study, seasonal E_t values were determined assuming completely effective precipitation. If precipitation had been assumed less than 100 percent effective, total seasonal E_t would also have been smaller, and the irrigation water requirement would be the same as in the original example.

[8]Blaney, H. F. Personal communication, Feb. 14, 1972. k values were computed from data published in reference 13.

SUMMARY AND CONCLUSIONS

E_t was measured during three seasons at each of two locations in high mountain meadows in Colorado. Sunken E_t tanks with native vegetation and with the water table maintained near the surface, were used to obtain the measurements. Class A pan evaporation, total solar radiation, temperature, humidity, and windspeed were measured daily.

Growing seasonal evaporation totals ranged from 70.6 to 83.2 cm. (27.8 to 32.8 inches). E_t varied from 58.9 to 62.2 cm. (23.2 to 24.5 inches) in South Park and 59.6 to 70.5 cm. (23.5 to 27.8 inches) at Gunnison. Measured E_t averaged about 82 percent of evaporation. The ratio of evaporation to total solar radiation for 4 years' data averaged about 0.60 and the ratio of E_t to solar radiation, 0.48.

During two seasons, the effectiveness of precipitation in reducing the demand for irrigation water was determined by sheltering two of the E_t tanks during storms while the other tanks were left unprotected. Small storms, less than 0.50 cm., (0.20 inches) averaged about 50 percent effective in reducing irrigation water demand. The effectiveness of all rainfall received during the growing season was 75 percent.

Various equations for relating measured climatic data to E_t were evaluated. A modified Penman-type equation estimated E_t values higher than measured. When corrected by a crop coefficient, this equation gave good estimates of seasonal E_t. The 1963 Jensen-Haise equation underestimated E_t by about 25 percent. Correcting the Jensen-Haise coefficients for altitude improved the seasonal estimates significantly. An equation of the same form, with coefficients derived from the 1968 data taken in South Park, gave the best estimates of measured E_t at both locations in future years. The Blaney-Criddle equation, with crop factors determined in Colorado's San Luis Valley, overestimated E_t measured in this study. New crop factors, based on current measured data, are presented.

Of all the E_t estimating equations evaluated, equation 6 derived from the 1968 data:

$$E_t = (0.0123\,T - 0.147)\,R_s \qquad (6)$$

gave the best estimate of measured E_t for the following years' data. This equation was used without crop coefficients. Only two climatic variables are required. This simplicity makes the equation very attractive for estimating E_t in high altitude Colorado meadows.

Total seasonal E_t measured during 3 years at two locations varied from 58.9 to 70.5 cm. (23.2 to 27.8 inches). The irrigation demand (E_t not supplied by rainfall) ranged from 42.9 to 54.8 cm. (16.9 to 21.6 inches) under conditions of adequate water through the full growing season.

LITERATURE CITED

(1) Blaney, H. F., and Criddle, W. D.
1950. Determining water requirements in irrigated areas from climatological and irrigation data. U.S. Dept. Agr., Soil Conserv. Serv. SCS-TP-96. 48 pp.

(2) California Department of Water Resources.
1963. Vegetative water use studies, 1954-60. Div. Water Resources Bul. 113. 121 pp.

(3)_____
1967. Vegetative water use. Bul. 113-2. 82 pp.

(4) Grable, A. R., Hanks, R. J., Willhite, F. M., and Haise, H. R.
1966. Difference of fertilization and altitude on energy budget for native meadows. Agron. Jour. 58:234-237.

(5) _____Willhite, F. M., and McCuistion, W. L.
1965. Hay production and nutrient uptake at high altitudes in Colorado with different grasses in conjunction with alsike clover or nitrogen fertilizer. Agron. Jour. 57: 543-547.

(6) Jensen, M. E., and Haise, H. R.
1963. Estimating evapotranspiration from solar radiation. Amer. Soc. Civ. Engin. Proc., Journ. Irrig. and Drain. Div. 89 (IR-4) Paper 3737.

(7) _____Robb, D. C. N., and Franzoy, C. E.
1970 Scheduling irrigation using climatic-crop-soil data. Amer. Soc. Civ. Engin. Proc., Jour. Irrig. and Drain. Div. 96 (IR-1). Paper 7131.

(8) Kruse, E. G., Haise, H. R., and Payne, M. L.
1970. Remote photographic acquisition of data. Amer. Soc. Civ. Engin. Proc., Jour. Irrig. and Drainage Div. Tech. Note 96 (4): 503-507.

(9) Meeker, R. I.
1928. Water supply and water consumption, San Luis Valley, Colorado. Colo. State Engin. Off. 85 pp. (Unpublished). Quoted in' U.S. Natl. Resources Commis. Regional Planning Rpt., Part VI—The Rio Grande Joint Investigation, v. 1, pt. 3, sec. e, pp. 334-335. U.S. Government Printing Office, Washington, D.C. 1938.

(10) Parshall, R. L.
1937. Laboratory measurement of evapotranspiration losses. Jour. Forestry 35:1033-1040.

(11) Penman, H. L.
1961. Weather, plant, and soil factors in hydrology. Weather 16:207-219.

(12) Siemer, E. G., and Heermann, D. F.
1970. Climatological data for Gunnison, Colo., and the Mountain Meadow Research Ranch, Colo. State. Univ. Expt. Sta. Gen. Ser. 908. 16 pp.

(13) Young, A. A., and Blaney, H. F.
1942. Use of water by native vegetation. Calif. Dept. Pub. Works, Div. Water Resources Bul. 50. 160 pp.

APPENDIX

I. DAILY VALUES OF CLIMATE AND EVAPOTRANSPIRATION MEASUREMENTS

GARO – 1968

WATER USE AND CLIMATIC DATA - SOUTH PARK - 1968

DAY	CALENDAR DATE	INCHES PRECIP	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN EVAP CM	PAN EVAP IN	SOLAR LANG.	RADIATION CM	RADIATION IN	EVAPOTRANSPIRATION FERTILIZED CENTIMETERS NO.1	FERTILIZED CENTIMETERS NO.2	FERTILIZED CENTIMETERS AVE.	FERTILIZED INCHES AVE.	UNFERTILIZED CENTIMETERS NO.3	UNFERTILIZED CENTIMETERS NO.4	UNFERTILIZED CENTIMETERS AVE.	UNFERTILIZED INCHES AVE.
124	5/ 3/68	0.00	54.	24.	27.	0.00	0.00	0.00	0.0	0.00	0.00	.23	0.00	.23	.09	0.00	0.00	0.00	0.00
125	5/ 4/68	0.00	54.	20.	22.	0.00	0.00	0.00	0.0	0.00	0.00	.26	0.00	.26	.10	0.00	0.00	0.00	0.00
126	5/ 5/68	0.00	54.	23.	28.	0.00	0.00	0.00	0.0	0.00	0.00	.18	0.00	.18	.07	0.00	0.00	0.00	0.00
127	5/ 6/68	0.00	52.	30.	20.	0.00	0.00	0.00	0.0	0.00	0.00	.17	0.00	.17	.07	0.00	0.00	0.00	0.00
128	5/ 7/68	0.00	35.	15.	9.	0.00	.24	.10	0.0	0.00	0.00	.13	.18	.16	.06	.08	0.00	.08	.03
129	5/ 8/68	0.00	39.	23.	17.	0.00	.28	.11	666.6	1.13	.44	.21	.16	.18	.07	.31	.17	.24	.10
130	5/ 9/68	0.00	50.	24.	28.	0.00	.09	.03	424.2	.72	.28	.20	0.00	.20	.08	.16	.34	.25	.10
131	5/10/68	0.00	46.	25.	25.	0.00	.17	.07	404.0	.68	.27	.05	0.00	.05	.02	.04	.07	.06	.02
132	5/11/68	0.00	50.	25.	27.	0.00	.45	.18	404.0	.68	.27	.16	0.00	.16	.06	.13	.16	.15	.06
133	5/12/68	.05	47.	32.	29.	0.00	.49	.19	404.0	.68	.27	.26	.13	.19	.08	.26	.33	.29	.11
134	5/13/68	.06	48.	26.	19.	0.00	.34	.14	626.2	1.06	.42	.27	.15	.21	.08	.25	.29	.27	.11
135	5/14/68	0.00	40.	28.	24.	7.59	.39	.15	686.8	1.16	.46	.20	.04	.12	.05	.21	.29	.25	.10
136	5/15/68	0.00	51.	26.	15.	12.95	.39	.15	727.2	1.23	.49	.23	.20	.21	.08	.27	.27	.27	.11
137	5/16/68	0.00	48.	23.	18.	8.28	.39	.15	656.5	1.11	.44	.27	.20	.23	.09	.26	.27	.26	.10
138	5/17/68	0.00	44.	18.	18.	8.28	.37	.14	656.5	1.11	.44	.23	.16	.19	.08	.25	.25	.25	.10
139	5/18/68	0.00	45.	26.	19.	5.26	.38	.15	666.6	1.13	.44	.22	.22	.22	.09	.27	.31	.29	.11
140	5/19/68	0.00	47.	20.	20.	6.89	.42	.16	626.2	1.06	.42	.31	.24	.28	.11	.22	.29	.26	.10
141	5/20/68	0.00	53.	28.	30.	6.89	.26	.10	626.2	1.06	.42	.26	.24	.25	.10	.21	.25	.23	.09
142	5/21/68	0.00	50.	26.	26.	.33	1.01	.40	606.0	1.03	.40	.24	.25	.24	.10	.48	.36	.42	.17
143	5/22/68	0.00	64.	41.	27.	8.73	.73	.29	686.8	1.16	.46	.35	.35	.35	.14	.36	.46	.41	.16
144	5/23/68	0.00	60.	28.	25.	9.28	.55	.22	767.6	1.30	.51	.37	.38	.37	.15	.35	.47	.41	.16
145	5/24/68	0.00	53.	36.	28.	7.34	.42	.17	343.4	.58	.23	.31	.28	.30	.12	.26	.32	.29	.12
146	5/25/68	0.00	47.	27.	23.	6.81	.09	.03	552.1	.94	.37	.34	.25	.30	.12	.24	.32	.28	.11
147	5/26/68	0.00	52.	27.	24.	6.81	.13	.05	552.1	.94	.37	.17	.25	.21	.08	.20	.32	.26	.10
148	5/27/68	0.00	52.	32.	24.	6.81	0.00	0.00	552.1	.94	.37	.11	.21	.16	.06	.20	.29	.25	.10
149	5/28/68	0.00	56.	27.	25.	6.92	0.00	0.00	606.0	1.03	.40	.29	.38	.33	.13	.35	.40	.38	.15
150	5/29/68	0.00	64.	28.	28.	7.06	.67	.27	747.4	1.27	.50	.45	.43	.44	.17	.60	.50	.55	.22
151	5/30/68	0.00	66.	32.	29.	7.06	.62	.24	747.4	1.27	.50	.51	.50	.50	.20	.42	.52	.47	.18
152	5/31/68	0.00	64.	32.	33.	6.72	.34	.13	464.6	.79	.31	.37	.35	.36	.14	.39	.41	.40	.16
153	6/ 1/68	.10	58.	29.	28.	4.95	.15	.06	565.6	.96	.38	.35	.38	.36	.14	.39	.31	.35	.14
154	6/ 2/68	0.00	65.	30.	32.	4.69	.15	.06	646.4	1.10	.43	.49	.48	.48	.19	.40	.52	.46	.18
155	6/ 3/68	0.00	79.	34.	33.	3.09	.15	.06	848.4	1.44	.57	.44	.46	.45	.18	.33	.41	.37	.15
156	6/ 4/68	0.00	68.	33.	33.	5.68	0.00	0.00	444.4	.75	.30	.33	.33	.33	.13	.27	.32	.30	.12
157	6/ 5/68	.08	64.	32.	31.	5.32	.63	.25	707.0	1.20	.47	.57	.54	.55	.22	.49	.55	.52	.20
158	6/ 6/68	0.00	68.	36.	32.	7.37	.52	.20	484.8	.82	.32	.65	.67	.66	.26	0.00	.66	.66	.26
159	6/ 7/68	0.00	62.	39.	33.	8.50	.11	.05	666.6	1.13	.44	.49	.51	.50	.20	0.00	.50	.50	.20
160	6/ 8/68	0.00	69.	34.	27.	5.91	.39	.16	626.2	1.06	.42	.49	.51	.50	.20	0.00	.48	.48	.19
161	6/ 9/68	0.00	65.	27.	25.	9.13	1.10	.43	484.8	.82	.32	.50	.52	.51	.20	.44	.50	.47	.19
162	6/10/68	0.00	54.	30.	26.	14.75	1.10	.43	666.6	1.13	.44	.52	.52	.52	.21	.45	.46	.46	.18
163	6/11/68	0.00	53.	31.	30.	.83	.58	.23	545.4	.92	.36	.44	.45	.44	.18	.40	.42	.41	.16
164	6/12/68	0.00	62.	30.	31.	5.83	.49	.19	666.6	1.13	.44	.56	.55	.56	.22	.43	.49	.46	.18
165	6/13/68	0.00	68.	34.	27.	2.08	.65	.26	828.2	1.40	.55	.58	.59	.58	.23	.49	.52	.51	.20
166	6/14/68	0.00	65.	33.	33.	7.07	.67	.26	606.0	1.03	.40	.79	.83	.81	.32	.64	.75	.70	.27

WATER USE AND CLIMATIC DATA - SOUTH PARK - 1968

DAY	CALENDAR DATE	INCHES PRECIP	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN EVAP CM	PAN EVAP IN	SOLAR LANG.	RADIATION CM	RADIATION IN	EVAPOTRANSPIRATION FERTILIZED CENTIMETERS NO.1	FERTILIZED CENTIMETERS NO.2	FERTILIZED CENTIMETERS AVE.	FERTILIZED INCHES AVE.	UNFERTILIZED CENTIMETERS NO.3	UNFERTILIZED CENTIMETERS NO.4	UNFERTILIZED CENTIMETERS AVE.	UNFERTILIZED INCHES AVE.
167	6/15/68	0.00	63.	36.	32.	7.07	.35	.14	606.0	1.03	.40	.51	.52	.51	.20	.42	.50	.46	.18
168	6/16/68	0.00	64.	34.	33.	9.17	.82	.32	565.6	.96	.38	.57	.62	.60	.23	.48	.52	.50	.20
169	6/17/68	0.00	67.	36.	29.	3.39	.61	.24	868.6	1.47	.58	.69	.67	.68	.27	.54	.58	.56	.22
170	6/18/68	0.00	68.	37.	30.	6.30	.72	.28	606.0	1.03	.40	.69	.69	.69	.27	.52	.61	.56	.22
171	6/19/68	0.00	70.	38.	34.	6.51	.72	.28	707.0	1.20	.47	.73	.73	.73	.29	.57	.64	.61	.24
172	6/20/68	0.00	72.	39.	33.	3.32	.54	.21	646.4	1.10	.43	.68	.65	.67	.26	.55	.65	.60	.24
173	6/21/68	0.00	73.	39.	35.	6.24	.68	.27	797.9	1.35	.53	.84	.90	.87	.34	.69	.78	.73	.29
174	6/22/68	0.00	72.	38.	35.	6.24	.31	.12	797.9	1.35	.53	.77	.80	.78	.31	.67	.67	.67	.26
175	6/23/68	0.00	70.	38.	34.	4.59	1.06	.42	686.8	1.16	.46	.52	.52	.52	.20	.43	.50	.47	.18
176	6/24/68	0.00	73.	37.	33.	3.31	.46	.18	303.0	.51	.20	0.00	0.00	0.00	0.00	.47	.50	.48	.19
177	6/25/68	0.00	66.	35.	29.	6.74	.59	.23	404.0	.68	.27	.46	.48	.47	.18	.43	1.20	.81	.32
178	6/26/68	0.00	59.	34.	33.	6.81	.63	.25	727.2	1.23	.49	.73	.73	.73	.29	.58	1.20	.89	.35
179	6/27/68	0.00	65.	42.	34.	6.81	.59	.23	727.2	1.23	.49	.67	.68	.67	.27	.61	.70	.66	.26
180	6/28/68	0.00	72.	37.	31.	6.32	.69	.27	949.4	1.61	.63	.79	.80	.79	.31	.67	.92	.79	.31
181	6/29/68	0.00	71.	45.	23.	6.47	.84	.33	505.0	.86	.34	.71	.76	.74	.29	.67	.76	.72	.28
182	6/30/68	0.00	69.	33.	18.	12.50	1.07	.42	848.4	1.44	.57	1.00	.99	1.00	.39	.89	0.00	.89	.35
183	7/ 1/68	0.00	61.	30.	31.	7.23	.59	.23	888.8	1.51	.59	.75	.84	.79	.31	.66	0.00	.66	.26
184	7/ 2/68	0.00	69.	42.	39.	3.80	.76	.30	727.2	1.23	.49	.65	.62	.64	.25	.55	.58	.56	.22
185	7/ 3/68	.06	70.	42.	34.	4.00	.72	.28	585.8	.99	.39	.71	.72	.72	.28	.62	.62	.62	.24
186	7/ 4/68	0.00	70.	38.	37.	5.35	.52	.21	767.6	1.30	.51	.58	.58	.58	.23	.57	.61	.59	.23
187	7/ 5/68	.33	66.	44.	41.	5.95	.49	.19	505.0	.86	.34	.47	.50	.49	.19	.46	.45	.46	.18
188	7/ 6/68	.02	56.	40.	36.	3.48	.49	.19	343.4	.58	.23	.47	.50	.49	.19	.46	.45	.46	.18
189	7/ 7/68	.02	70.	42.	36.	5.20	.49	.19	363.6	.62	.24	.47	.50	.49	.19	.46	.45	.46	.18
190	7/ 8/68	0.00	70.	44.	42.	2.50	.37	.15	1111.0	1.88	.74	.47	.50	.49	.19	.48	.49	.48	.19
191	7/ 9/68	0.00	67.	42.	42.	0.00	.47	.18	323.2	.55	.22	.27	.29	.28	.11	.26	.40	.33	.13
192	7/10/68	0.00	68.	40.	41.	0.00	.32	.12	525.2	.89	.35	.36	.36	.36	.14	.33	.31	.32	.13
193	7/11/68	0.00	71.	40.	47.	3.90	.29	.12	434.3	.74	.29	.37	.39	.38	.15	.35	.29	.32	.13
194	7/12/68	.27	66.	40.	43.	3.90	.46	.18	434.3	.74	.29	.40	.46	.43	.17	.45	.47	.46	.18
195	7/13/68	0.00	71.	39.	43.	3.67	.46	.18	545.4	.92	.36	.40	.46	.43	.17	.45	.47	.46	.18
196	7/14/68	0.00	74.	46.	44.	3.86	.43	.17	686.8	1.16	.46	.46	.44	.45	.18	.47	.49	.48	.19
197	7/15/68	0.00	74.	45.	44.	3.66	.39	.15	525.2	.89	.35	.43	.47	.45	.18	.45	.33	.39	.15
198	7/16/68	0.00	72.	36.	40.	3.68	.55	.22	525.2	.89	.35	.49	.53	.51	.20	.49	.57	.53	.21
199	7/17/68	0.00	71.	42.	44.	4.51	.84	.33	464.6	.79	.31	.44	.62	.53	.21	.58	.57	.58	.23
200	7/18/68	0.00	74.	40.	46.	3.45	.48	.19	626.2	1.06	.42	.57	.57	.57	.23	.60	.56	.58	.23
201	7/19/68	0.00	70.	38.	43.	4.57	.41	.16	585.8	.99	.39	.37	.41	.39	.15	.40	.42	.41	.16
202	7/20/68	0.00	69.	37.	42.	4.18	.26	.10	767.6	1.30	.51	.25	.28	.26	.10	.27	.24	.25	.10
203	7/21/68	0.00	73.	36.	44.	5.23	.63	.25	323.2	.55	.22	.49	.55	.52	.21	.56	.56	.56	.22
204	7/22/68	.15	77.	33.	50.	3.30	.43	.17	585.8	.99	.39	.44	.46	.45	.18	.45	.45	.45	.18
205	7/23/68	.20	73.	42.	50.	3.76	.56	.22	363.6	.62	.24	.56	.56	.56	.22	.56	.56	.56	.22
206	7/24/68	0.00	73.	42.	47.	3.46	.05	.02	505.0	.86	.34	.05	.05	.05	.02	.05	.05	.05	.02
207	7/25/68	0.00	71.	37.	49.	3.46	.05	.02	505.0	.86	.34	.05	.05	.05	.02	.05	.05	.05	.02
208	7/26/68	0.00	73.	33.	51.	3.45	.03	.01	404.0	.68	.27	.05	.05	.05	.02	.05	.05	.05	.02
209	7/27/68	.55	67.	49.	53.	2.91	1.44	.57	404.0	.68	.27	1.45	1.45	1.45	.57	1.44	1.45	1.45	.57
210	7/28/68	.10	56.	47.	49.	2.91	.29	.12	404.0	.68	.27	.31	.31	.31	.12	.30	.31	.31	.12
211	7/29/68	.18	70.	42.	48.	2.91	.50	.20	404.0	.68	.27	.51	.51	.51	.20	.51	.51	.51	.20
212	7/30/68	.58	76.	41.	49.	2.83	1.50	.59	464.6	.79	.31	1.53	1.53	1.53	.60	1.52	1.53	1.52	.60
213	7/31/68	.30	76.	31.	48.	4.13	.79	.31	383.8	.65	.26	.82	.82	.82	.32	.81	.82	.81	.32
214	8/ 1/68	.02	56.	39.	50.	2.45	.10	.04	222.2	.38	.15	.11	.11	.11	.04	.10	.11	.10	.04

WATER USE AND CLIMATIC DATA - SOUTH PARK - 1968

DAY	CALENDAR DATE	INCHES PRECIP	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN EVAP CM	PAN EVAP IN	SOLAR LANG.	RADIATION CM	RADIATION IN	EVAPOTRANSPIRATION FERTILIZED CENTIMETERS NO.1	FERTILIZED CENTIMETERS NO.2	FERTILIZED CENTIMETERS AVE.	FERTILIZED INCHES AVE.	UNFERTILIZED CENTIMETERS NO.3	UNFERTILIZED CENTIMETERS NO.4	UNFERTILIZED CENTIMETERS AVE.	UNFERTILIZED INCHES AVE.
215	8/ 2/68	0.00	66.	46.	49.	2.42	.05	.02	424.2	.72	.28	.06	.05	.06	.02	.05	.05	.05	.02
216	8/ 3/68	.18	66.	36.	48.	2.40	.52	.20	323.2	.55	.22	.51	.51	.51	.20	.51	.51	.51	.20
217	8/ 4/68	.16	68.	40.	46.	3.12	.48	.19	656.5	1.11	.44	.46	.46	.46	.18	.45	.46	.46	.18
218	8/ 5/68	0.00	73.	40.	48.	3.12	.08	.03	656.5	1.11	.44	.06	.05	.06	.02	.05	.05	.05	.02
219	8/ 6/68	.05	72.	46.	50.	3.90	.14	.06	464.6	.79	.31	.18	.18	.18	.07	.17	.18	.18	.07
220	8/ 7/68	.63	70.	43.	50.	2.36	1.67	.66	363.6	.62	.24	1.66	1.65	1.66	.65	1.65	1.65	1.65	.65
221	8/ 8/68	0.00	68.	42.	50.	2.94	.07	.03	414.1	.70	.28	.06	.05	.06	.02	.05	.05	.05	.02
222	8/ 9/68	.26	71.	40.	53.	2.94	.72	.29	414.1	.70	.28	.72	.71	.72	.28	.71	.71	.71	.28
223	8/10/68	.31	67.	47.	53.	3.03	.82	.32	323.2	.55	.22	.84	.84	.84	.33	.84	.84	.84	.33
224	8/11/68	.63	61.	48.	49.	3.64	1.64	.64	444.4	.75	.30	1.66	1.65	1.66	.65	1.65	1.65	1.65	.65
225	8/12/68	.10	66.	36.	44.	3.64	.29	.12	444.4	.75	.30	.31	.31	.31	.12	.30	.31	.31	.12
226	8/13/68	0.00	69.	36.	46.	3.44	.07	.03	424.2	.72	.28	.06	.05	.06	.02	.05	.05	.05	.02
227	8/14/68	0.00	69.	39.	42.	3.77	.07	.03	505.0	.86	.34	.06	.05	.06	.02	.05	.05	.05	.02
228	8/15/68	0.00	58.	32.	37.	6.64	.07	.03	585.8	.99	.39	.06	.05	.06	.02	.05	.05	.05	.02
229	8/16/68	0.00	65.	27.	37.	4.68	.07	.03	585.8	.99	.39	.06	.05	.06	.02	.05	.05	.05	.02
230	8/17/68	0.00	67.	36.	38.	4.31	.07	.03	606.0	1.03	.40	.06	.05	.06	.02	.05	.05	.05	.02
231	8/18/68	0.00	68.	34.	37.	8.92	.10	.04	666.6	1.13	.44	.06	.05	.06	.02	.05	.05	.05	.02
232	8/19/68	0.00	66.	36.	40.	7.61	.08	.03	727.2	1.23	.49	.06	.05	.06	.02	.05	.05	.05	.02
233	8/20/68	0.00	70.	35.	42.	5.87	.09	.04	585.8	.99	.39	.06	.05	.06	.02	.05	.05	.05	.02
234	8/21/68	.08	73.	42.	43.	4.32	.27	.11	767.6	1.30	.51	.26	.26	.26	.10	.25	.26	.25	.10
235	8/22/68	0.00	70.	34.	39.	3.79	.08	.03	383.8	.65	.26	.06	.05	.06	.02	.05	.05	.05	.02
236	8/23/68	0.00	69.	35.	29.	6.84	.08	.03	484.8	.82	.32	.05	.06	.05	.02	.04	.06	.05	.02
237	8/24/68	0.00	60.	19.	34.	7.48	.04	.02	686.8	1.16	.46	.06	.06	.06	.02	.06	.08	.07	.03
238	8/25/68	0.00	72.	31.	37.	4.18	.02	.01	626.2	1.06	.42	.06	.07	.06	.02	.07	.05	.06	.02
239	8/26/68	0.00	73.	32.	40.	3.90	.04	.01	545.4	.92	.36	.06	.06	.06	.02	.03	0.00	.03	.01
240	8/27/68	0.00	69.	43.	46.	3.86	1.65	.65	404.0	.68	.27	.27	.30	.28	.11	.25	.26	.26	.10
241	8/28/68	.09	71.	13.	42.	3.86	.33	.13	404.0	.68	.27	.26	.26	.26	.10	.22	.33	.28	.11
242	8/29/68	.09	67.	39.	45.	4.21	.50	.20	474.7	.80	.32	.26	.26	.26	.10	.22	.23	.23	.09
243	8/30/68	.12	54.	33.	39.	4.21	.37	.15	474.7	.80	.32	.26	.26	.26	.10	.22	.30	.26	.10
244	8/31/68	0.00	62.	30.	36.	4.21	.35	.14	474.7	.80	.32	.26	.26	.26	.10	.22	0.00	.22	.09
245	9/ 1/68	.23	69.	28.	35.	4.21	1.05	.41	474.7	.80	.32	.89	.92	.90	.36	.87	.58	.73	.29
246	9/ 2/68	0.00	69.	34.	37.	3.88	.50	.19	585.8	.99	.39	.35	.36	.35	.14	.30	.37	.34	.13
247	9/ 3/68	.12	66.	35.	39.	6.52	.94	.37	303.0	.51	.20	.26	.61	.43	.17	.22	.29	.25	.10
248	9/ 4/68	0.00	52.	24.	28.	10.43	.10	.04	686.8	1.16	.46	.26	.01	.14	.05	.22	.29	.25	.10
249	9/ 5/68	0.00	63.	26.	34.	3.68	.21	.08	525.2	.89	.35	.26	.22	.24	.10	.22	.29	.25	.10
250	9/ 6/68	0.00	65.	23.	30.	5.27	.81	.32	484.8	.82	.32	.31	.30	.30	.12	.28	.28	.28	.11
251	9/ 7/68	0.00	63.	26.	31.	5.21	.57	.23	336.7	.57	.22	.34	.38	.36	.14	.30	.37	.33	.13
252	9/ 8/68	0.00	65.	26.	31.	5.21	.39	.16	336.7	.57	.22	0.00	.46	.46	.18	.33	.45	.39	.15
253	9/ 9/68	0.00	67.	25.	33.	5.21	.02	.01	336.7	.57	.22	0.00	.40	.40	.16	.35	.60	.47	.19
254	9/10/68	0.00	71.	28.	34.	5.73	.90	.35	969.6	1.64	.65	.30	.32	.31	.12	.22	.35	.28	.11
255	9/11/68	0.00	71.	26.	34.	3.35	.53	.21	222.2	.38	.15	.35	.27	.31	.12	.09	.27	.18	.07
256	9/12/68	.08	69.	29.	38.	4.70	.59	.23	262.6	.45	.18	.56	.58	.57	.22	.39	.48	.43	.17
257	9/13/68	0.00	68.	30.	41.	3.10	.13	.05	191.9	.33	.13	.08	.10	.09	.03	.03	.04	.03	.01
258	9/14/68	0.00	66.	21.	35.	3.10	.09	.03	191.9	.33	.13	.13	.15	.14	.05	0.00	.09	.09	.04
259	9/15/68	0.00	69.	26.	36.	10.71	.80	.31	383.8	.65	.26	.35	.39	.37	.15	.28	.39	.33	.13
260	9/16/68	0.00	52.	24.	25.	8.97	.64	.25	424.2	.72	.28	.36	.36	.36	.14	.24	.34	.29	.11
261	9/17/68	0.00	44.	19.	28.	6.42	.23	.09	505.0	.86	.34	.30	.28	.29	.11	.21	.27	.24	.09
262	9/18/68	0.00	60.	15.	31.	6.42	.22	.09	505.0	.86	.34	.30	.33	.31	.12	.26	.32	.29	.12

WATER USE AND CLIMATIC DATA - SOUTH PARK - 1968

DAY	CALENDAR DATE	INCHES PRECIP	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN EVAP CM	PAN EVAP IN	SOLAR LANG.	RADIATION CM	RADIATION IN	EVAPOTRANSPIRATION FERTILIZED CENTIMETERS NO.1	NO.2	AVE.	INCHES AVE.	EVAPOTRANSPIRATION UNFERTILIZED CENTIMETERS NO.3	NO.4	AVE.	INCHES AVE.
263	9/19/68	0.00	66.	19.	26.	4.14	.30	.12	545.4	.92	.36	.32	.33	.33	.13	.28	.32	.30	.12
264	9/20/68	0.00	65.	20.	30.	7.01	.52	.21	505.0	.86	.34	.38	.35	.37	.14	.30	.37	.34	.13
265	9/21/68	0.00	63.	33.	31.	9.22	.22	.09	525.2	.89	.35	.43	.44	.43	.17	.29	.44	.36	.14
266	9/22/68	0.00	62.	20.	34.	6.23	1.43	.56	404.0	.68	.27	.43	.45	.44	.17	.35	.47	.41	.16
267	9/23/68	0.00	58.	20.	26.	4.15	.31	.12	484.8	.82	.32	.28	.26	.27	.11	.17	.29	.23	.09
268	9/24/68	0.00	64.	14.	28.	3.48	.19	.07	505.0	.86	.34	.24	.28	.26	.10	.21	.39	.30	.12
269	9/25/68	0.00	66.	16.	24.	3.75	.39	.15	525.2	.89	.35	.31	.32	.31	.12	.28	.27	.28	.11
270	9/26/68	0.00	67.	20.	32.	7.61	.13	.05	464.6	.79	.31	.28	.30	.29	.11	.26	.33	.29	.12
271	9/27/68	0.00	66.	24.	29.	3.32	.19	.07	377.1	.64	.25	.15	.29	.22	.09	.14	.20	.17	.07
272	9/28/68	0.00	66.	26.	35.	3.32	.27	.11	377.1	.64	.25	.10	.29	.20	.08	.30	.28	.29	.11
273	9/29/68	.15	66.	19.	38.	3.32	1.55	.61	377.1	.64	.25	.58	.54	.56	.22	.51	.54	.52	.21
274	9/30/68	0.00	63.	22.	31.	6.88	.17	.07	464.6	.79	.31	.01	.01	.01	.01	.01	.01	.01	.00
275	10/ 1/68	0.00	60.	26.	25.	7.09	.34	.13	565.6	.96	.38	.31	.31	.31	.12	.24	.27	.25	.10
276	10/ 2/68	0.00	61.	24.	31.	5.88	.38	.15	383.8	.65	.26	.39	.41	.40	.16	.29	.31	.30	.12
277	10/ 3/68	0.00	61.	18.	27.	4.98	.37	.14	262.6	.45	.18	.25	.34	.29	.12	.23	.36	.29	.12
278	10/ 4/68	0.00	65.	14.	38.	4.98	.26	.10	262.6	.45	.18	.49	.30	.40	.16	.24	.33	.28	.11
279	10/ 5/68	0.00	65.	12.	32.	6.91	.15	.06	626.2	1.06	.42	0.00	.18	.18	.07	.18	.25	.21	.08
280	10/ 6/68	0.00	56.	20.	30.	4.83	.83	.33	262.6	.45	.18	.26	.27	.27	.10	.15	.34	.24	.10
281	10/ 7/68	0.00	61.	14.	27.	4.83	.58	.23	262.6	.45	.18	.31	.33	.32	.13	.29	.27	.28	.11
282	10/ 8/68	.26	53.	19.	28.	4.15	1.00	.39	343.4	.58	.23	.21	.21	.21	.08	.19	.88	.54	.21
283	10/ 9/68	0.00	54.	12.	31.	4.07	.07	.03	262.6	.45	.18	.21	.21	.21	.08	.19	0.00	.19	.08
284	10/10/68	0.00	59.	20.	23.	5.97	.09	.03	262.6	.45	.18	.21	.21	.21	.08	.19	0.00	.19	.08
285	10/11/68	0.00	58.	29.	31.	3.92	.08	.03	276.1	.47	.18	.21	.21	.21	.08	.19	.00	.10	.04
286	10/12/68	0.00	55.	28.	36.	3.92	.07	.03	276.1	.47	.18	.21	.21	.21	.08	.16	.19	.17	.07
287	10/13/68	0.00	59.	21.	31.	3.92	.06	.02	276.1	.47	.18	.20	.34	.27	.11	.25	.31	.28	.11
288	10/14/68	0.00	62.	25.	34.	9.22	.63	.25	494.9	.84	.33	.29	.30	.30	.12	.27	.34	.30	.12
289	10/15/68	0.00	66.	18.	31.	9.22	.66	.26	494.9	.84	.33	.40	.39	.39	.15	.36	.44	.40	.16
290	10/16/68	0.00	54.	23.	20.	8.71	.27	.10	444.4	.75	.30	.27	.26	.27	.11	.18	.23	.21	.08
291	10/17/68	0.00	42.	9.	13.	8.71	.64	.25	444.4	.75	.30	.16	.19	.17	.07	.17	0.00	.17	.07
292	10/18/68	0.00	55.	1.	18.	5.89	.09	.04	363.6	.62	.24	.30	.07	.19	.07	.14	0.00	.14	.06
293	10/19/68	0.00	54.	22.	15.	4.88	.10	.04	242.4	.41	.16	.07	.27	.17	.07	.21	0.00	.21	.08
294	10/20/68	0.00	56.	19.	20.	4.88	.13	.05	242.4	.41	.16	.21	.18	.19	.08	.24	0.00	.24	.09
295	10/21/68	0.00	59.	16.		4.88	.10	.04	242.4	.41	.16	.20	.22	.21	.08	.18	0.00	.18	.07

GARO – 1969

WATER USE AND CLIMATIC DATA - SOUTH PARK - 1969

DAY	CALENDAR DATE	INCHES PRECIP	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN EVAP CM	PAN EVAP IN	SOLAR LANG.	RADIATION CM	RADIATION IN	EVAPOTRANSPIRATION UNSHELTERED CENTIMETERS NO.1	NO.2	AVE.	INCHES AVE.
135	5/15/69	0.00					0.00	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00
136	5/16/69	0.00	50.	28.	29.	4.75	0.00	0.00	388.5	.66	.26	0.00	0.00	0.00	0.00
137	5/17/69	0.00	64.	32.	17.	4.75	0.00	0.00	614.3	1.04	.41	.56	0.00	.56	.22
138	5/18/69	0.00	65.	28.	15.	4.75	.57	.23	492.2	.83	.33	.45	0.00	.45	.18
139	5/19/69	0.00	66.	28.	15.	4.75	0.00	0.00	492.2	.83	.33	.45	0.00	.45	.18
140	5/20/69	0.00	68.	37.	18.	6.29	0.00	0.00	492.2	.83	.33	.36	0.00	.36	.14
141	5/21/69	0.00	68.	30.	23.	6.29	0.00	0.00	492.2	.83	.33	.49	0.00	.49	.19

WATER USE AND CLIMATIC DATA - SOUTH PARK - 1969

DAY	CALENDAR DATE	INCHES PRECIP	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN EVAP CM	PAN EVAP IN	SOLAR LANG.	RADIATION CM	RADIATION IN	--EVAPOTRANSPIRATION-- UNSHELTERED CENTIMETERS NO.1	NO.2	AVE.	INCHES AVE.
142	5/22/69	0.00	67.	40.	26.	4.65	0.00	0.00	336.0	.57	.22	.31	.54	.43	.17
143	5/23/69	.05	62.	32.	33.	4.65	.13	.05	231.0	.39	.15	.33	.42	.38	.15
144	5/24/69	0.00	66.	29.	18.	4.65	0.00	0.00	414.7	.70	.28	.21	.30	.25	.10
145	5/25/69	0.00	70.	29.	26.	4.65	0.00	0.00	434.0	.74	.29	.40	.46	.43	.17
146	5/26/69	0.00	74.	32.	27.	1.43	0.00	0.00	498.7	.85	.33	.35	.38	.37	.14
147	5/27/69	0.00	73.	34.	25.	7.47	0.00	0.00	274.8	.47	.18	.36	.49	.43	.17
148	5/28/69	0.00	70.	34.	34.	2.44	0.00	0.00	264.2	.45	.18	.28	.40	.34	.13
149	5/29/69	0.00	64.	35.	43.	4.48	.44	.17	320.2	.54	.21	.19	.34	.27	.10
150	5/30/69	0.00	68.	34.	36.	5.77	.73	.29	358.8	.61	.24	.48	.44	.46	.18
151	5/31/69	0.00	62.	45.	36.	9.67	.96	.38	343.0	.58	.23	.37	.55	.46	.18
152	6/ 1/69	0.00	53.	33.	22.	4.16	.84	.33	409.5	.69	.27	0.00	.46	.46	.18
153	6/ 2/69	0.00	61.	26.	34.	4.67	1.02	.40	301.0	.51	.20	0.00	.42	.42	.17
154	6/ 3/69	0.00	60.	30.	35.	4.67	.58	.23	336.0	.57	.22	0.00	.41	.41	.16
155	6/ 4/69	0.00	68.	32.	38.	4.67	.44	.17	350.0	.59	.23	0.00	.43	.43	.17
156	6/ 5/69	0.00	70.	35.	42.	4.67	.63	.25	337.7	.57	.23	0.00	.50	.50	.20
157	6/ 6/69	0.00	66.	38.	40.	4.67	.56	.22	159.3	.27	.11	.47	.45	.46	.18
158	6/ 7/69	.15	59.	41.	40.	4.67	.70	.28	94.5	.16	.06	.58	.58	.58	.23
159	6/ 8/69	0.00	57.	37.		4.67	.10	.04	245.0	.42	.16	0.00	.24	.24	.09
160	6/ 9/69	.03	65.	44.	44.	5.58	.21	.08	294.0	.50	.20	.28	.27	.27	.11
161	6/10/69	0.00	63.	39.	37.	4.51	.43	.17	315.0	.53	.21	.34	.36	.35	.14
162	6/11/69	.10	47.	36.	37.	7.29	.49	.19	78.8	.13	.05	.56	.49	.52	.21
163	6/12/69	.90	50.	32.	41.	4.18	.36	.14	117.3	.20	.08	.56	.49	.52	.21
164	6/13/69	0.00	55.	38.	41.	4.00	.36	.14	290.5	.49	.19	.56	.49	.52	.21
165	6/14/69	0.00	53.	39.	42.	4.49	.36	.14	220.5	.37	.15	.56	.49	.52	.21
166	6/15/69	.04	57.	41.	45.	3.77	.30	.12	220.5	.37	.15	.56	.49	.52	.21
167	6/16/69	.12	54.	45.	45.	3.90	.50	.20	120.8	.20	.08	.32	.30	.31	.12
168	6/17/69	.20	51.	44.		3.97	.48	.19	101.5	.17	.07	.13	.51	.32	.13
169	6/18/69	.20	59.	36.	38.	2.93	.48	.19	327.2	.55	.22	.13	.14	.13	.05
170	6/19/69	.17	65.	36.	40.	4.95	.48	.19	407.7	.69	.27	.13	.14	.13	.05
171	6/20/69	0.00	68.	39.	34.	5.71	.05	.02	446.3	.76	.30	.13	.14	.13	.05
172	6/21/69	0.00	70.	36.	32.	5.08	.43	.17	427.0	.72	.28	.13	.14	.13	.05
173	6/22/69	0.00	63.	37.	38.	6.39	.81	.32	383.3	.65	.26	.13	.14	.13	.05
174	6/23/69	0.00	62.	43.	41.	5.14	.79	.31	231.0	.39	.15	.05	.35	.20	.08
175	6/24/69	.11	53.	43.	37.	8.27	.81	.32	122.5	.21	.08	.45	.46	.45	.18
176	6/25/69	.02	50.	33.	31.	9.53	.42	.17	490.0	.83	.33	.11	.20	.15	.06
177	6/26/69	.01	50.	35.	26.	8.14	.48	.19	568.8	.96	.38	.29	.37	.33	.13
178	6/27/69	0.00	66.	36.	32.	7.08	.55	.22	560.0	.95	.37	.40	.50	.45	.18
179	6/28/69	0.00	71.	35.	30.	7.70	.52	.20	556.5	.94	.37	.45	.61	.53	.21

WATER USE AND CLIMATIC DATA - SOUTH PARK - 1969

DAY	CALENDAR DATE	INCHES PRECIP	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN EVAP CM	PAN EVAP IN	SOLAR LANG.	RADIATION CM	RADIATION IN	--EVAPOTRANSPIRATION-- UNSHELTERED CENTIMETERS NO.1	CENTIMETERS NO.2	CENTIMETERS AVE.	INCHES AVE.
180	6/29/69	0.00	71.	34.	35.	6.66	.97	.38	544.2	.92	.36	.51	.66	.58	.23
181	6/30/69	0.00	72.	33.	49.	4.78	.82	.32	560.0	.95	.37	.44	.58	.51	.20
182	7/ 1/69	0.00	75.	44.	35.	5.82	.78	.31	528.5	.90	.35	.41	.60	.51	.20
183	7/ 2/69	0.00	76.	39.	40.	4.93	.80	.31	351.8	.60	.23	.44	.62	.53	.21
184	7/ 3/69	0.00	76.	42.	47.	4.65	.74	.29	252.0	.43	.17	.26	.45	.36	.14
185	7/ 4/69	.10	60.	44.	49.	3.90	.77	.30	129.5	.22	.09	.27	.33	.30	.12
186	7/ 5/69	.27	69.	44.	47.	3.63	.17	.07	350.0	.59	.23	.11	.33	.22	.09
187	7/ 6/69	0.00	72.	43.	37.	5.80	.41	.16	500.5	.85	.33	0.00	.33	.33	.13
188	7/ 7/69	.01	71.	36.	30.	5.42	.83	.33	561.8	.95	.37	0.00	.69	.69	.27
189	7/ 8/69	0.00	70.	36.	42.	3.66	.65	.26	453.3	.77	.30	0.00	.55	.55	.22
190	7/ 9/69	0.00	69.	40.	42.	2.47	.41	.16	332.5	.56	.22	0.00	.33	.33	.13
191	7/10/69	0.00	70.	40.	44.	3.00	.47	.19	523.2	.89	.35	0.00	.45	.45	.18
192	7/11/69	0.00	74.	41.	43.	2.54	.62	.24	502.2	.85	.34	0.00	.50	.50	.20
193	7/12/69	0.00	64.	48.	48.	3.55	.53	.21	182.0	.31	.12	0.00	.29	.29	.11
194	7/13/69	0.00	73.	40.	47.	2.90	.27	.10	367.5	.62	.25	0.00	.36	.36	.14
195	7/14/69	0.00	76.	44.	47.	3.08	.42	.16	400.7	.68	.27	0.00	.35	.35	.14
196	7/15/69	0.00	77.	44.	46.	2.92	.38	.15	448.0	.76	.30	0.00	.30	.30	.12
197	7/16/69	0.00	72.	44.	50.	3.36	.50	.20	294.0	.50	.20	0.00	.35	.35	.14
198	7/17/69	0.00	71.	45.	48.	2.97	.26	.10	278.3	.47	.19	0.00	.26	.26	.10
199	7/18/69	0.00	71.	50.	51.	3.99	.48	.19	374.5	.63	.25	0.00	.36	.36	.14
200	7/19/69	1.13	64.	51.	53.	2.39	.48	.19	162.7	.28	.11	0.00	.43	.43	.17
201	7/20/69	0.00	68.	50.	51.	3.27	.48	.19	364.0	.62	.24	0.00	.43	.43	.17
202	7/21/69	0.00	71.	45.	46.	2.19	.48	.19	441.0	.75	.29	0.00	.43	.43	.17
203	7/22/69	0.00	73.	44.	44.	3.21	.48	.19	493.5	.84	.33	0.00	.43	.43	.17
204	7/23/69	0.00	72.	42.	47.	3.37	.63	.25	451.5	.77	.30	0.00	.43	.43	.17
205	7/24/69	0.00	69.	45.	49.	3.13	.57	.22	250.3	.42	.17	0.00	.28	.28	.11
206	7/25/69	0.00	73.	48.	49.	2.66	.11	.04	509.2	.86	.34	0.00	.35	.35	.14
207	7/26/69	.06	75.	43.	47.	3.51	.57	.22	507.5	.86	.34	0.00	.55	.55	.22
208	7/27/69	0.00	77.	42.	49.	2.64	.56	.22	570.5	.97	.38	0.00	.50	.50	.20
209	7/28/69	0.00	78.	49.	50.	2.68	.53	.21	442.8	.75	.30	0.00	.50	.50	.20
210	7/29/69	.08	75.	47.	51.	4.32	.50	.20	344.7	.58	.23	0.00	.43	.43	.17
211	7/30/69	.46	70.	51.	53.	4.17	.50	.20	374.5	.63	.25	0.00	.43	.43	.17
212	7/31/69	.29	71.	50.	53.	3.22	.50	.20	474.2	.80	.32	0.00	.43	.43	.17
213	8/ 1/69	0.00	74.	44.	48.	2.88	.50	.20	509.2	.86	.34	0.00	.43	.43	.17
214	8/ 2/69	0.00	78.	43.	51.	3.23	.50	.20	546.0	.93	.36	0.00	.43	.43	.17
215	8/ 3/69	0.00	73.	49.	50.	3.23	.50	.20	353.5	.60	.24	0.00	.43	.43	.17
216	8/ 4/69	0.00	75.	45.	48.	3.06	.06	.02	525.0	.89	.35	.15	.35	.25	.10
217	8/ 5/69	.08	78.	47.	49.	2.64	.25	.10	560.0	.95	.37	.43	.49	.46	.18

WATER USE AND CLIMATIC DATA - SOUTH PARK - 1969

DAY	CALENDAR DATE	INCHES PRECIP	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN EVAP CM	PAN EVAP IN	SOLAR LANG.	RADIATION CM	RADIATION IN	--EVAPOTRANSPIRATION-- UNSHELTERED CENTIMETERS NO.1	NO.2	AVE.	INCHES AVE.
218	8/ 6/69	0.00	78.	43.	43.	3.87	.62	.24	544.3	.92	.36	.44	.50	.47	.19
219	8/ 7/69	0.00	80.	41.	49.	2.68	.74	.29	544.2	.92	.36	.32	.36	.34	.14
220	8/ 8/69	0.00	81.	40.	38.	2.88	.77	.30	476.0	.81	.32	.38	.36	.37	.15
221	8/ 9/69	0.00	75.	39.	45.	3.35	.76	.30	465.5	.79	.31	.36	.40	.38	.15
222	8/10/69	0.00	80.	40.	45.	2.44	.44	.17	395.5	.67	.26	.32	.35	.33	.13
223	8/11/69	0.00	77.	40.	49.	2.48	.58	.23	306.3	.52	.20	.28	.29	.28	.11
224	8/12/69	.01	75.	40.	46.	3.95	.52	.21	334.2	.57	.22	.25	.26	.25	.10
225	8/13/69	0.00	62.	42.	49.	3.48	.75	.30	346.5	.59	.23	.26	.34	.30	.12
226	8/14/69	.57	73.	50.	45.	3.97	.40	.16	358.7	.61	.24	.26	.34	.30	.12
227	8/15/69	.02	73.	36.	36.	3.78	.40	.16	453.3	.77	.30	.26	.34	.30	.12
228	8/16/69	0.00	75.	38.	43.	3.35	.40	.16	364.0	.62	.24	.26	.34	.30	.12
229	8/17/69	0.00	72.	41.	46.	3.35	.40	.16	393.8	.67	.26	.26	.34	.30	.12
230	8/18/69	.14	70.	40.	46.	3.54	.40	.16	285.3	.48	.19	.26	.34	.30	.12
231	8/19/69	0.00	70.	38.	44.	3.54	.56	.22	311.5	.53	.21	.26	.34	.30	.12
232	8/20/69	0.00	71.	40.	45.	3.45	.64	.25	493.5	.84	.33	.36	.37	.36	.14
233	8/21/69	.25	70.	40.	48.	4.63	1.02	.40	486.5	.82	.32	.36	.37	.36	.14
234	8/22/69	.06	73.	41.	48.	2.92	.36	.14	486.5	.82	.32	.36	.37	.36	.14
235	8/23/69	.37	66.	43.	48.	3.18	.51	.20	292.3	.50	.20	.36	.37	.36	.14
236	8/24/69	.08	73.	37.	41.	3.63	.51	.20	469.0	.79	.31	.36	.37	.36	.14
237	8/25/69	0.00	74.	39.	39.	4.24	.51	.20	371.0	.63	.25	.36	.37	.36	.14
238	8/26/69	0.00	74.	42.	45.	3.42	.41	.16	444.5	.75	.30	.36	.32	.34	.13
239	8/27/69	0.00	76.	40.	45.	2.69	.46	.18	350.0	.59	.23	.30	.28	.29	.11
240	8/28/69	0.00	77.	43.	48.	4.41	.53	.21	309.8	.53	.21	.35	.34	.35	.14
241	8/29/69	.03	74.	41.	44.	4.11	.50	.20	386.7	.66	.26	.34	.33	.34	.13
242	8/30/69	.04	68.	48.	49.	3.45	.57	.23	376.2	.64	.25	.43	.44	.44	.17
243	8/31/69	.14	76.	36.	43.	1.08	.67	.26	63.0	.11	.04	.28	.27	.27	.11
244	9/ 1/69	.04	67.	38.	43.	5.32	.23	.09	668.5	1.13	.45	.28	.27	.27	.11
245	9/ 2/69	.03	71.	33.	36.	2.13	.24	.09	374.5	.63	.25	.28	.27	.27	.11
246	9/ 3/69	0.00	67.	33.	38.	3.62	.28	.11	376.3	.64	.25	.29	.28	.29	.11
247	9/ 4/69	0.00	67.	38.	36.	4.98	.26	.10	372.7	.63	.25	.41	.38	.39	.15
248	9/ 5/69	0.00	68.	37.	37.	4.19	.42	.17	367.5	.62	.25	.35	.34	.35	.14
249	9/ 6/69	0.00	68.	36.	38.	4.19	.38	.15	346.5	.59	.23	.32	.33	.33	.13
250	9/ 7/69	0.00	68.	37.	43.	4.19	.58	.23	301.0	.51	.20	.32	.15	.23	.09
251	9/ 8/69	.22	64.	41.	46.	2.99	.40	.16	288.8	.49	.19	.20	.15	.18	.07
252	9/ 9/69	.57	62.	38.	44.	3.27	.40	.16	327.2	.55	.22	.20	.15	.18	.07
253	9/10/69	.29	65.	39.	43.	2.56	.40	.16	343.0	.58	.23	.20	.15	.18	.07
254	9/11/69	0.00	65.	39.	43.	3.13	.41	.16	388.5	.66	.26	.20	.15	.18	.07
255	9/12/69	0.00	64.	38.	40.	3.64	.30	.12	302.7	.51	.20	.20	.15	.18	.07

WATER USE AND CLIMATIC DATA - SOUTH PARK - 1969

DAY	CALENDAR DATE	INCHES PRECIP	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN EVAP CM	PAN EVAP IN	SOLAR LANG.	RADIATION CM	RADIATION IN	--EVAPOTRANSPIRATION-- UNSHELTERED CENTIMETERS NO.1	NO.2	AVE.	INCHES AVE.
256	9/13/69	0.00	64.	33.	39.	3.01	.26	.10	292.3	.50	.20	.23	.15	.19	.08
257	9/14/69	0.00	62.	33.	37.	2.91	.23	.09	358.8	.61	.24	.23	.28	.26	.10
258	9/15/69	.05	58.	38.	39.	4.23	.41	.16	271.2	.46	.18	.18	.16	.17	.07
259	9/16/69	.07	58.	30.	37.	3.18	.12	.05	336.0	.57	.22	.18	.16	.17	.07
260	9/17/69	0.00	54.	36.	40.	3.46	.12	.05	278.3	.47	.19	.18	.16	.17	.07
261	9/18/69	.02	62.	30.	34.	2.23	.12	.05	409.5	.69	.27	.28	.22	.25	.10
262	9/19/69	.02	66.	32.	36.	2.30	.60	.24	390.2	.66	.26	.33	.32	.32	.13
263	9/20/69	.14	59.	40.	42.	2.45	.19	.08	223.1	.38	.15	.23	.23	.23	.09
264	9/21/69	.21	58.	34.	37.	4.17	.19	.08	223.1	.38	.15	.23	.23	.23	.09
265	9/22/69	0.00	55.	32.	31.	4.17	.19	.08	329.0	.56	.22	.23	.23	.23	.09
266	9/23/69	0.00	64.	30.	30.	4.17	.19	.08	353.5	.60	.24	.23	.23	.23	.09
267	9/24/69	0.00	62.	30.	28.	4.17	.19	.08	309.7	.52	.21	.23	.23	.23	.09
268	9/25/69	0.00	64.	29.	28.	4.17	.19	.08	381.5	.65	.25	.27	.25	.26	.10
269	9/26/69	0.00	67.	28.	34.	4.17	.19	.08	339.5	.58	.23	.28	.25	.26	.10
270	9/27/69	0.00	66.	29.	33.	3.88	.25	.10	334.2	.57	.22	.25	.23	.24	.09
271	9/28/69	0.00	66.	30.	31.	2.74	.86	.34	316.7	.54	.21	.29	.49	.39	.15
272	9/29/69	0.00	68.	26.	28.	4.80	.35	.14	327.3	.55	.22	.27	.25	.26	.10
273	9/30/69	0.00	60.	30.	36.	6.57	.37	.14	248.5	.42	.17	.26	.25	.26	.10
274	10/ 1/69	0.00	58.	40.	30.	5.67	.77	.30	355.2	.60	.24	.26	.24	.25	.10
275	10/ 2/69	0.00	64.	23.	29.	0.00	.30	.12	343.0	.58	.23	.28	.27	.27	.11
276	10/ 3/69	.10	34.	33.	33.	0.00	1.24	.49				0.00	.25	.25	.10

GARO — 1970

WATER USE AND CLIMATIC DATA - SOUTH PARK - 1970

DAY	CALENDAR DATE	INCHES PRECIP	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN EVAP CM	PAN EVAP IN	SOLAR LANG.	RADIATION CM	RADIATION IN	--EVAPOTRANSPIRATION-- UNSHELTERED CENTIMETERS NO.1	NO.2	AVE.	INCHES AVE.
125	5/ 5/70	0.00	58.	26.	22.	0.00	0.00	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00
126	5/ 6/70	0.00	61.	28.	21.	3.90	0.00	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00
127	5/ 7/70	0.00	60.	27.	11.	7.50	0.00	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00
128	5/ 8/70	0.00	49.	25.	17.	2.83	.83	.33	0.0	0.00	0.00	.73	1.12	.92	.36
129	5/ 9/70	0.00	52.	32.	23.	7.17	.83	.33	0.0	0.00	0.00	.53	.40	.46	.18
130	5/10/70	0.00	60.	27.	17.	4.58	.83	.33	0.0	0.00	0.00	.47	.40	.43	.17
131	5/11/70	0.00	66.	41.	16.	10.42	.83	.33	0.0	0.00	0.00	.85	.49	.67	.26
132	5/12/70	0.00	64.	32.	16.	10.42	.83	.33	0.0	0.00	0.00	.63	.39	.51	.20
133	5/13/70	0.00	61.	26.	20.	9.96	.83	.33	0.0	0.00	0.00	.55	0.00	.55	.22
134	5/14/70	0.00	57.	30.	24.	15.15	.75	.30	483.0	.82	.32	.38	0.00	.38	.15
135	5/15/70	0.00	57.	19.	15.	6.02	.79	.31	810.3	1.37	.54	.44	.34	.39	.15
136	5/16/70	0.00	69.	26.	16.	5.88	.79	.31	505.7	.86	.34	.56	.42	.49	.19

WATER USE AND CLIMATIC DATA - SOUTH PARK - 1970

DAY	CALENDAR DATE	INCHES PRECIP	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN EVAP CM	PAN EVAP IN	SOLAR LANG.	RADIATION CM	RADIATION IN	--EVAPOTRANSPIRATION-- UNSHELTERED CENTIMETERS NO.1	NO.2	AVE.	INCHES AVE.
137	5/17/70	0.00	70.	25.	14.	6.13	.79	.31	694.7	1.18	.46	.61	0.00	.61	.24
138	5/18/70	0.00	70.	28.	19.	6.02	.79	.31	570.9	.97	.38	.56	0.00	.56	.22
139	5/19/70	0.00	68.	29.	24.	6.02	.79	.31	570.9	.97	.38	.50	0.00	.50	.20
140	5/20/70	0.00	68.	29.	22.	6.02	.79	.31	570.9	.97	.38	.49	0.00	.49	.19
141	5/21/70	0.00	70.	30.	26.	6.02	.79	.31	570.9	.97	.38	.40	0.00	.40	.16
142	5/22/70	0.00	67.	37.	21.	5.59	.93	.37	635.2	1.08	.42	.47	0.00	.47	.18
143	5/23/70	0.00	67.	32.	22.	4.18	.78	.31	614.3	1.04	.41	.48	.36	.42	.17
144	5/24/70	0.00	67.	30.	26.	4.55	.75	.30	498.8	.85	.33	.46	.37	.42	.16
145	5/25/70	0.00	68.	35.	30.	6.10	.75	.29	570.5	.97	.38	.49	.44	.47	.18
146	5/26/70	0.00	65.	30.	28.	4.63	.68	.27	428.8	.73	.29	.38	.31	.34	.14
147	5/27/70	.01	63.	29.	33.	5.01	.50	.20	318.5	.54	.21	.26	.25	.25	.10
148	5/28/70	0.00	60.	32.	29.	5.53	.32	.13	409.5	.69	.27	0.00	.26	.26	.10
149	5/29/70	0.00	63.	33.	31.	5.92	.57	.23	500.5	.85	.33	0.00	.35	.35	.14
150	5/30/70	0.00	66.	33.	21.	6.37	.70	.28	591.5	1.00	.39	.49	.42	.45	.18
151	5/31/70	.04	64.	33.	32.	6.85	.62	.24	203.0	.34	.14	.26	.10	.18	.07
152	6/ 1/70	.02	54.	22.	20.	3.93	.28	.11	623.0	1.06	.42	.20	.05	.12	.05
153	6/ 2/70	0.00	60.	25.	24.	5.41	.53	.21	556.5	.94	.37	.44	0.00	.44	.17
154	6/ 3/70	0.00	60.	26.	25.	5.40	.47	.18	607.2	1.03	.41	.44	.39	.41	.16
155	6/ 4/70	0.00	58.	30.	30.	4.98	.59	.23	425.3	.72	.28	.36	.37	.37	.14
156	6/ 5/70	0.00	63.	24.	20.	3.87	.46	.18	700.0	1.19	.47	.53	.40	.47	.18
157	6/ 6/70	0.00	65.	28.	27.	4.38	.73	.29	565.3	.96	.38	.48	.40	.44	.17
158	6/ 7/70	.08	61.	31.	32.	4.10	.51	.20	434.0	.74	.29	.40	.60	.50	.20
159	6/ 8/70	0.00	63.	37.	31.	5.75	.34	.13	470.7	.80	.31	.24	.40	.32	.13
160	6/ 9/70	0.00	61.	32.	30.	6.27	.54	.21	439.2	.74	.29	.38	.40	.39	.15
161	6/10/70	.45	59.	37.	35.	5.45	.59	.23	259.0	.44	.17	.60	.66	.63	.25
162	6/11/70	.75	50.	34.	28.	5.45	.59	.23	409.5	.69	.27	.60	.66	.63	.25
163	6/12/70	0.00	58.	38.	24.	10.69	.59	.23	673.7	1.14	.45	.60	.66	.63	.25
164	6/13/70	0.00	69.	34.	25.	7.77	.59	.23	574.0	.97	.38	.60	.66	.63	.25
165	6/14/70	0.00	68.	35.	24.	8.12	.59	.23	633.5	1.07	.42	.60	.66	.63	.25
166	6/15/70	0.00	66.	32.	15.	6.65	1.04	.41	652.7	1.11	.44	.57	0.00	.57	.22
167	6/16/70	0.00	70.	26.	18.	6.65	.94	.37	598.5	1.01	.40	.64	.65	.64	.25
168	6/17/70	0.00	72.	29.	23.	5.29	.79	.31	638.8	1.08	.43	.38	.67	.52	.20
169	6/18/70	0.00	73.	40.	31.	4.89	1.06	.42	570.5	.97	.38	.67	.68	.67	.27
170	6/19/70	0.00	71.	35.	32.	4.68	.64	.25	658.0	1.12	.44	.48	.70	.59	.23
171	6/20/70	0.00	72.	36.	38.	3.72	.40	.16	510.4	.87	.34	.67	.60	.64	.25
172	6/21/70	.60	68.	48.	43.	3.72	.65	.26	510.4	.87	.34	.48	.47	.47	.19
173	6/22/70	.04	70.	40.	40.	3.72	.65	.26	510.4	.87	.34	.48	.47	.47	.19
174	6/23/70	0.00	70.	44.	39.	6.32	.65	.26	588.0	1.00	.39	.48	.47	.47	.19

WATER USE AND CLIMATIC DATA - SOUTH PARK - 1970

DAY	CALENDAR DATE	INCHES PRECIP	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN EVAP CM	PAN EVAP IN	SOLAR LANG.	RADIATION CM	RADIATION IN	--EVAPOTRANSPIRATION-- UNSHELTERED CENTIMETERS NO.1	CENTIMETERS NO.2	CENTIMETERS AVE.	INCHES AVE.
175	6/24/70	0.00	76.	41.	38.	3.88	.59	.23	596.7	1.01	.40	.48	.47	.47	.19
176	6/25/70	0.00	76.	44.	34.	6.24	.73	.29	673.8	1.14	.45	.22	.65	.44	.17
177	6/26/70	0.00	79.	42.	37.	2.85	.91	.36	628.3	1.06	.42	.56	.65	.61	.24
178	6/27/70	0.00	78.	44.	42.	3.55	.55	.22	493.5	.84	.33	.61	.66	.63	.25
179	6/28/70	0.00	75.	44.	38.	8.14	.75	.29	455.0	.77	.30	.66	.71	.69	.27
180	6/29/70	.03	71.	42.	42.	2.45	.91	.36	472.5	.80	.32	.51	.53	.52	.21
181	6/30/70	0.00	72.	46.	25.	6.11	.59	.23	659.8	1.12	.44	.68	.78	.73	.29
182	7/ 1/70	0.00	74.	40.	31.	3.28	.64	.25	546.0	.93	.36	.54	.66	.60	.24
183	7/ 2/70	0.00	77.	47.	37.	3.24	.52	.20	603.8	1.02	.40	.69	.65	.67	.26
184	7/ 3/70	.51	73.	42.	41.	4.69	.68	.27	486.5	.82	.32	.61	.63	.62	.25
185	7/ 4/70	0.00	76.	40.	41.	3.70	.68	.27	595.0	1.01	.40	.61	.63	.62	.25
186	7/ 5/70	0.00	72.	43.	40.	3.98	.68	.27	437.5	.74	.29	.61	.63	.62	.25
187	7/ 6/70	0.00	71.	46.	44.	4.46	.52	.21	490.0	.83	.33	.26	.31	.28	.11
188	7/ 7/70	.30	67.	50.	47.	4.85	1.14	.45	665.0	1.13	.44	.43	.42	.42	.17
189	7/ 8/70	.08	70.	44.	46.	2.55	.35	.14	140.0	.24	.09	.43	.42	.42	.17
190	7/ 9/70	.05	71.	44.	47.	4.26	.21	.08	455.0	.77	.30	.43	.42	.42	.17
191	7/10/70	.07	74.	44.	43.	3.51	.24	.10	588.0	1.00	.39	.43	.42	.42	.17
192	7/11/70	.09	72.	46.	45.	3.51	.45	.18	460.3	.78	.31	.65	.68	.66	.26
193	7/12/70	.22	69.	45.	41.	4.00	.32	.13	509.2	.86	.34	.40	.41	.41	.16
194	7/13/70	0.00	77.	41.	36.	2.94	.32	.13	642.2	1.09	.43	.40	.41	.41	.16
195	7/14/70	0.00	75.	42.	40.	3.45	.43	.17	456.8	.77	.30	.50	.51	.50	.20
196	7/15/70	0.00	78.	49.	49.	3.78	.80	.31	560.0	.95	.37	.54	.56	.55	.22
197	7/16/70	0.00	76.	41.	39.	3.05	.17	.07	526.7	.89	.35	.48	.52	.50	.20
198	7/17/70	0.00	74.	42.	42.	3.05	.66	.26	374.5	.63	.25	.48	.46	.47	.18
199	7/18/70	.20	74.	43.	43.	4.15	.72	.28	393.8	.67	.26	.64	.61	.62	.25
200	7/19/70	.10	74.	40.	44.	2.61	.35	.14	484.8	.82	.32	.41	.44	.43	.17
201	7/20/70	.31	70.	46.	45.	3.02	.87	.34	495.3	.84	.33	.49	.36	.42	.17
202	7/21/70	.01	77.	39.	42.	2.58	.19	.07	497.0	.84	.33	.49	.36	.42	.17
203	7/22/70	0.00	68.	45.	43.	4.49	.19	.07	434.0	.74	.29	.49	.36	.42	.17
204	7/23/70	0.00	71.	49.	38.	4.56	.19	.07	616.0	1.04	.41	.39	.44	.42	.16
205	7/24/70	0.00	70.	44.	43.	2.89	.67	.27	451.5	.77	.30	.39	.44	.41	.16
206	7/25/70	.05	70.	42.	41.	3.17	.37	.15	371.0	.63	.25	.41	.41	.41	.16
207	7/26/70	.06	70.	46.	41.	4.30	.50	.20	470.8	.80	.31	.44	.42	.43	.17
208	7/27/70	.13	69.	40.	41.	3.43	.46	.18	404.2	.69	.27	.37	.36	.37	.14
209	7/28/70	.09	72.	40.	39.	2.98	.46	.18	588.0	1.00	.39	.37	.36	.37	.14
210	7/29/70	0.00	73.	38.	38.	2.51	.46	.18	715.8	1.21	.48	.37	.36	.37	.14
211	7/30/70	0.00	76.	40.	41.	3.03	.75	.29	388.5	.66	.26	.44	.39	.41	.16
212	7/31/70	.01	78.	42.	43.	2.85	.31	.12	661.5	1.12	.44	.45	.46	.46	.18

WATER USE AND CLIMATIC DATA - SOUTH PARK - 1970

DAY	CALENDAR DATE	INCHES PRECIP	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN EVAP CM	PAN EVAP IN	SOLAR LANG.	RADIATION CM	RADIATION IN	--EVAPOTRANSPIRATION-- UNSHELTERED CENTIMETERS NO.1	NO.2	AVE.	INCHES AVE.
213	8/ 1/70	0.00	78.	48.	46.	2.63	.31	.12	278.3	.47	.19	.45	.36	.40	.16
214	8/ 2/70	.15	78.	42.	43.	3.40	.31	.12	467.3	.79	.31	.55	.48	.52	.20
215	8/ 3/70	0.00	78.	46.	48.	2.80	.26	.10	407.7	.69	.27	.31	.26	.28	.11
216	8/ 4/70	.06	73.	50.	49.	3.04	.43	.17	554.8	.94	.37	.38	.31	.34	.14
217	8/ 5/70	.19	75.	43.	49.	3.03	.29	.11	379.7	.64	.25	.38	.31	.34	.14
218	8/ 6/70	.03	75.	47.	48.	3.79	.29	.11	449.7	.76	.30	.38	.31	.34	.14
219	8/ 7/70	.03	71.	52.	51.	2.46	.29	.11	446.2	.76	.30	.36	.30	.33	.13
220	8/ 8/70	.32	75.	49.	45.	3.71	.29	.11	448.0	.76	.30	.36	.30	.33	.13
221	8/ 9/70	0.00	73.	40.	41.	3.66	.29	.11	530.2	.90	.35	.36	.30	.33	.13
222	8/10/70	0.00	77.	38.	36.	2.38	.28	.11	595.0	1.01	.40	.31	.30	.31	.12
223	8/11/70	0.00	75.	39.	34.	2.91	.62	.25	561.7	.95	.37	.39	.23	.31	.12
224	8/12/70	0.00	72.	34.	33.	2.38	.42	.16	402.5	.68	.27	.27	.18	.23	.09
225	8/13/70	0.00	75.	33.	30.	3.59	.54	.21	595.0	1.01	.40	.22	.25	.23	.09
226	8/14/70	0.00	70.	33.	37.	3.94	.67	.26	374.5	.63	.25	.28	.27	.27	.11
227	8/15/70	.76	57.	41.	39.	3.17	.62	.24	374.5	.63	.25	.28	.27	.27	.11
228	8/16/70	.05	68.	32.	36.	2.70	.62	.24	374.5	.63	.25	.28	.27	.27	.11
229	8/17/70	0.00	74.	34.	35.	3.04	.62	.24	465.5	.79	.31	.28	.27	.27	.11
230	8/18/70	0.00	73.	36.	35.	2.85	.62	.24	472.5	.80	.32	.28	.27	.27	.11
231	8/19/70	.35	78.	38.	41.	3.06	.21	.08	283.5	.48	.19	.28	.27	.27	.11
232	8/20/70	0.00	59.	46.	45.	2.69	.21	.08	283.5	.48	.19	.28	.27	.27	.11
233	8/21/70	.25	63.	44.	40.	2.67	.21	.08	225.8	.38	.15	.12	.20	.16	.06
234	8/22/70	.03	62.	37.	36.	3.03	.36	.14	535.5	.91	.36	.12	.20	.16	.06
235	8/23/70	.03	67.	34.	32.	2.85	.46	.18	381.5	.65	.25	.12	.20	.16	.06
236	8/24/70	0.00	69.	31.	30.	2.94	.61	.24	491.8	.83	.33	.12	.34	.23	.09
237	8/25/70	0.00	72.	33.	30.	2.54	.42	.17	540.8	.92	.36	.34	.39	.36	.14
238	8/26/70	0.00	73.	37.	39.	2.40	.49	.19	411.2	.70	.27	.33	.35	.34	.13
239	8/27/70	.05	70.	37.	37.	3.18	.58	.23	434.0	.74	.29	.33	.32	.33	.13
240	8/28/70	0.00	74.	35.	35.	3.86	.39	.15	453.3	.77	.30	.27	.29	.28	.11
241	8/29/70	0.00	75.	35.	34.	2.57	.39	.15	474.3	.80	.32	.35	.35	.35	.14
242	8/30/70	.38	68.	48.	43.	3.60	.47	.19	359.3	.61	.24	.31	.32	.31	.12
243	8/31/70	.02	70.	35.	37.	2.93	.47	.19	359.3	.61	.24	.31	.32	.31	.12
244	9/ 1/70	.03	68.	35.	39.	3.40	.47	.19	359.3	.61	.24	.31	.32	.31	.12
245	9/ 2/70	0.00	68.	36.	31.	3.60	.58	.23	366.6	.62	.24	.31	.32	.31	.12
246	9/ 3/70	0.00	66.	26.	21.	4.47	.33	.13	366.6	.62	.24	.34	.31	.33	.13
247	9/ 4/70	0.00	56.	23.	28.	4.39	.23	.09	385.7	.65	.26	.24	.32	.28	.11
248	9/ 5/70	0.00	60.	28.	35.	3.74	.44	.17	385.7	.65	.26	.15	.16	.16	.06
249	9/ 6/70	.11	53.	43.	27.	6.47	.51	.20	385.7	.65	.26	.34	.35	.35	.14
250	9/ 7/70	0.00	67.	37.	26.	5.57	.14	.05	385.7	.65	.26	.34	.33	.33	.13

WATER USE AND CLIMATIC DATA - SOUTH PARK - 1970

DAY	CALENDAR DATE	INCHES PRECIP	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN EVAP CM	PAN EVAP IN	SOLAR LANG.	RADIATION CM	RADIATION IN	--EVAPOTRANSPIRATION-- UNSHELTERED CENTIMETERS NO.1	NO.2	AVE.	INCHES AVE.
251	9/ 8/70	0.00	69.	25.	23.	3.80	.14	.05	385.7	.65	.26	.37	.41	.39	.15
252	9/ 9/70	0.00	65.	36.	26.	6.59	.72	.28	442.0	.75	.29	.53	.48	.50	.20
253	9/10/70	0.00	70.	20.	22.	2.93	.39	.16	442.0	.75	.29	.38	.34	.36	.14
254	9/11/70	0.00	68.	32.	22.	5.90	.66	.26	442.0	.75	.29	.42	.44	.43	.17
255	9/12/70	.16	63.	27.	30.	5.53	1.29	.51	442.0	.75	.29	.41	.34	.38	.15
256	9/13/70	.21	57.	35.	37.	8.20	.69	.27	442.0	.75	.29	.41	.34	.38	.15
257	9/14/70	.03	57.	31.	30.	8.29	.18	.07	442.0	.75	.29	.41	.34	.38	.15
258	9/15/70	0.00	60.	19.	18.	4.71	.08	.03	442.0	.75	.29	.41	.34	.38	.15
259	9/16/70	0.00	63.	33.	28.	4.79	.37	.15	444.5	.75	.30	.39	.34	.37	.14
260	9/17/70	0.00	68.	23.	19.	2.10	.13	.05	465.5	.79	.31	.32	.33	.32	.13
261	9/18/70	0.00	68.	23.	22.	3.95	.73	.29	458.5	.78	.31	.24	.26	.25	.10
262	9/19/70	0.00	67.	30.	25.	4.96	.78	.31	400.8	.68	.27	.24	.26	.25	.10
263	9/20/70	0.00	64.	29.	22.	7.26	.78	.31	448.0	.76	.30	.24	.26	.25	.10
264	9/21/70	.38	54.	23.	22.	6.12	.78	.31	339.5	.58	.23	.24	.26	.25	.10
265	9/22/70	.79	42.	17.	28.	4.11	.78	.31	339.5	.58	.23	.24	.26	.25	.10
266	9/23/70	0.00	54.	15.	20.	2.27	.78	.31	400.8	.68	.27	.24	.26	.25	.10
267	9/24/70	0.00	56.	22.	21.	6.05	.78	.31	453.3	.77	.30	.24	.26	.25	.10
268	9/25/70	.28	38.	14.	23.	4.74	.39	.15	351.7	.60	.23	.14	.15	.14	.06
269	9/26/70	0.00	48.	12.	10.	2.52	.39	.15	476.0	.81	.32	.14	.15	.14	.06
270	9/27/70	0.00	60.	20.	18.	2.27	.28	.11	449.7	.76	.30	.14	.15	.14	.06
271	9/28/70	0.00	60.	20.	21.	2.04	.54	.21	362.2	.61	.24	.14	.15	.14	.06
272	9/29/70	0.00	63.	17.		1.35	.22	.09	362.2	.61	.24	.14	.15	.14	.06

GUNNISON — 1969

WATER USE AND CLIMATIC DATA - GUNNISON - 1969

DAY	CALENDAR DATE	PRECIP INCHES	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN EVAP CM	PAN EVAP IN	SOLAR LANG.	RADIATION CM	RADIATION IN	----EVAPOTRANSPIRATION---- SHELTERED CENTIMETERS NO.1	NO.2	AVE.	INCHES AVE.	UNSHELTERED CENTIMETERS NO.3	NO.4	AVE.	INCHES AVE.
116	4/26/69	0.00	39.	13.		0.00	0.00	0.00	0.0	0.00	0.00	.59	.59	.59	.23	0.00	0.00	0.00	0.00
117	4/27/69	0.00	48.	18.		0.00	0.00	0.00	0.0	0.00	0.00	.40	.50	.45	.18	0.00	0.00	0.00	0.00
118	4/28/69	0.00	54.	17.	23.	0.00	0.00	0.00	0.0	0.00	0.00	.60	.41	.50	.20	0.00	0.00	0.00	0.00
119	4/29/69	0.00	61.	17.	17.	0.00	0.00	0.00	490.0	.83	.33	.47	.47	.47	.18	0.00	0.00	0.00	0.00
120	4/30/69	0.00	61.	19.	25.	0.00	.95	.37	507.5	.86	.34	.46	.47	.47	.18	0.00	0.00	0.00	0.00
121	5/ 1/69	0.00	69.	21.	21.	0.00	.64	.25	612.5	1.04	.41	.50	.50	.50	.20	0.00	0.00	0.00	0.00
122	5/ 2/69	0.00	66.	21.	24.	0.00	.58	.23	542.5	.92	.36	.38	.41	.39	.16	0.00	0.00	0.00	0.00
123	5/ 3/69	0.00	62.	25.	29.	0.00	.68	.27	560.0	.95	.37	.50	.51	.51	.20	0.00	0.00	0.00	0.00
124	5/ 4/69	0.00	57.	31.	36.	0.00	.47	.18	271.3	.46	.18	.28	.34	.31	.12	0.00	0.00	0.00	0.00
125	5/ 5/69	0.00	55.	36.	33.	0.00	.29	.11	271.3	.46	.18	.15	.15	.15	.06	0.00	0.00	0.00	0.00
126	5/ 6/69	.22	52.	30.	41.	0.00	.87	.34	271.3	.46	.18	.25	.26	.25	.10	0.00	0.00	0.00	0.00
127	5/ 7/69	.35	44.	32.		0.00	.99	.39	271.3	.46	.18	.10	.09	.09	.04	0.00	0.00	0.00	0.00
128	5/ 8/69	0.00	54.	31.	34.	0.00	.52	.20	455.0	.77	.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
129	5/ 9/69	0.00	60.	26.	28.	0.00	.66	.26	525.0	.89	.35	.48	.37	.42	.17	.62	0.00	.62	.24

WATER USE AND CLIMATIC DATA - GUNNISON - 1969

DAY	CALENDAR DATE	PRECIP INCHES	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN EVAP CM	PAN EVAP IN	SOLAR LANG.	RADIATION CM	RADIATION IN	EVAPOTRANSPIRATION SHELTERED CENTIMETERS NO.1	SHELTERED NO.2	SHELTERED AVE.	SHELTERED INCHES AVE.	UNSHELTERED CENTIMETERS NO.3	UNSHELTERED NO.4	UNSHELTERED AVE.	UNSHELTERED INCHES AVE.
130	5/10/69	0.00	62.	23.	15.	0.00	.60	.24	647.5	1.10	.43	.50	.49	.50	.20	.62	.65	.64	.25
131	5/11/69	0.00	64.	28.	23.	0.00	.75	.30	525.0	.89	.35	.59	.55	.57	.22	.62	.61	.62	.24
132	5/12/69	0.00	63.	30.	34.	0.00	.78	.31	460.2	.78	.31	.56	.52	.54	.21	.60	0.00	.60	.24
133	5/13/69	.06	61.	32.	40.	0.00	.62	.24	420.0	.71	.28	.39	.40	.39	.15	.57	.15	.36	.14
134	5/14/69	0.00	61.	27.	36.	4.25	.33	.13	427.0	.72	.28	.32	.29	.30	.12	.31	.32	.32	.13
135	5/15/69	.05	61.	24.	29.	4.25	.14	.05	351.8	.60	.23	.33	.33	.33	.13	.34	.36	.35	.14
136	5/16/69	0.00	63.	24.	36.	6.09	.38	.15	509.2	.86	.34	.48	.42	.45	.18	.45	.47	.46	.18
137	5/17/69	0.00	68.	24.	35.	4.42	.04	.02	661.5	1.12	.44	.52	.47	.49	.19	.54	.54	.54	.21
138	5/18/69	0.00	71.	23.	33.	4.77	.56	.22	546.0	.93	.36	.49	.47	.48	.19	.50	.54	.52	.20
139	5/19/69	0.00	72.	27.	23.	5.61	.82	.32	686.0	1.16	.46	.65	.64	.65	.26	.70	.67	.69	.27
140	5/20/69	0.00	72.	26.	35.	4.84	.87	.34	626.5	1.06	.42	.60	.57	.58	.23	.65	.66	.66	.26
141	5/21/69	0.00	74.	33.	33.	5.42	.83	.33	628.3	1.06	.42	.68	.64	.66	.26	.69	.70	.70	.27
142	5/22/69	0.00	70.	33.	39.	4.67	.68	.27	490.0	.83	.33	.54	.51	.52	.21	.53	.54	.54	.21
143	5/23/69	.04	64.	30.	48.	4.63	.61	.24	339.5	.58	.23	.42	.40	.41	.16	.45	.45	.45	.18
144	5/24/69	0.00	67.	30.	39.	4.30	.39	.15	574.0	.97	.38	.45	.44	.44	.17	.42	.44	.43	.17
145	5/25/69	0.00	71.	28.	41.	4.04	.58	.23	586.2	.99	.39	.52	.52	.52	.20	.51	.49	.50	.20
146	5/26/69	0.00	73.	30.	38.	3.87	.54	.21	628.3	1.06	.42	.54	.54	.54	.21	.48	.59	.53	.21
147	5/27/69	0.00	73.	32.	39.	4.03	.75	.30	448.0	.76	.30	.50	.40	.45	.18	.49	.38	.43	.17
148	5/28/69	0.00	72.	31.	36.	4.00	.50	.20	682.5	1.16	.46	.54	.48	.51	.20	.57	.60	.59	.23
149	5/29/69	0.00	73.	37.	39.	3.94	.29	.12	350.0	.59	.23	.62	.58	.60	.24	.59	.66	.62	.24
150	5/30/69	0.00	72.	36.	41.	3.94	.55	.21	542.5	.92	.36	.65	.63	.64	.25	.64	.70	.67	.26
151	5/31/69	0.00	65.	43.	37.	7.33	.24	.09	358.7	.61	.24	.55	.53	.54	.21	.51	.56	.53	.21
152	6/ 1/69	0.00	58.	30.	32.	6.79	.46	.18	647.5	1.10	.43	.69	.64	.66	.26	.66	.69	.67	.27
153	6/ 2/69	0.00	64.	28.	35.	5.65	.65	.26	593.2	1.01	.40	.57	.50	.53	.21	.56	.55	.56	.22
154	6/ 3/69	0.00	69.	31.	37.	3.61	0.00	0.00	593.2	1.01	.40	.63	.56	.59	.23	.55	.53	.54	.21
155	6/ 4/69	0.00	71.	34.	39.	3.64	1.00	.39	484.2	.82	.32	.56	.55	.56	.22	.57	.60	.59	.23
156	6/ 5/69	0.00	73.	36.	44.	4.28	1.00	.39	484.2	.82	.32	.59	.57	.58	.23	.63	.60	.61	.24
157	6/ 6/69	.04	68.	48.	46.	3.66	1.00	.39	484.2	.82	.32	.45	.47	.46	.18	.49	.55	.52	.20
158	6/ 7/69	.07	68.	38.	45.	3.55	1.00	.39	554.8	.94	.37	.34	.35	.35	.14	.49	.47	.48	.19
159	6/ 8/69	0.00	72.	35.	40.	3.65	.18	.07	455.0	.77	.30	.49	.44	.46	.18	.40	.42	.41	.16
160	6/ 9/69	0.00	73.	35.	41.	3.82	.62	.24	486.5	.82	.32	.40	.42	.41	.16	.50	.48	.49	.19
161	6/10/69	.04	63.	38.	37.	4.90	.78	.31	444.5	.75	.30	.53	.52	.52	.21	.60	.62	.61	.24
162	6/11/69	.20	50.	34.	38.	5.20	.32	.13	241.5	.41	.16	.28	.33	.30	.12	.65	.64	.64	.25
163	6/12/69	0.00	60.	28.	40.	4.08	.32	.13	582.7	.99	.39	.47	.42	.44	.18	.10	.09	.10	.04
164	6/13/69	.15	61.	34.	42.	3.95	.42	.17	448.0	.76	.30	.27	.25	.26	.10	.68	.23	.45	.18
165	6/14/69	.02	60.	38.	45.	3.95	.42	.17	385.0	.65	.26	.03	.01	.02	.01	.29	.23	.26	.10
166	6/15/69	.47	62.	40.	46.	2.77	.42	.17	316.7	.54	.21	.22	.23	.23	.09	.29	.23	.26	.10
167	6/16/69	0.00	62.	39.	46.	3.74	.52	.20	337.8	.57	.23	.14	.13	.14	.05	.29	.23	.26	.10
168	6/17/69	.05	57.	44.	44.	3.00	.17	.07	299.3	.51	.20	.16	.17	.17	.07	.29	.23	.26	.10
169	6/18/69	.05	59.	34.	42.	2.57	.18	.07	392.0	.66	.26	.25	.26	.25	.10	.29	.23	.26	.10
170	6/19/69	0.00	68.	33.	41.	3.62	.40	.16	554.8	.94	.37	.41	.32	.37	.14	.29	.23	.26	.10
171	6/20/69	0.00	72.	36.	39.	3.82	.64	.25	588.0	1.00	.39	.49	.45	.47	.19	.29	.23	.26	.10
172	6/21/69	0.00	73.	33.	36.	4.64	.69	.27	623.0	1.06	.42	.70	.67	.68	.27	.68	.23	.46	.18
173	6/22/69	0.00	65.	32.	41.	4.88	.73	.29	563.5	.96	.38	.56	.59	.58	.23	.68	.23	.46	.18
174	6/23/69	0.00	60.	35.	44.	3.68	.46	.18	213.5	.36	.14	.29	.30	.29	.12	.17	.23	.20	.08
175	6/24/69	.80	49.	38.	42.	4.76	.37	.14	159.2	.27	.11	.10	.09	.09	.04	.17	.23	.20	.08
176	6/25/69	.10	54.	32.	37.	4.76	.37	.14	416.5	.71	.28	.23	.24	.24	.09	.17	.23	.20	.08
177	6/26/69	.34	56.	33.	33.	5.10	.37	.14	537.2	.91	.36	.33	.26	.30	.12	.17	.23	.20	.08

WATER USE AND CLIMATIC DATA - GUNNISON - 1969

DAY	CALENDAR DATE	PRECIP INCHES	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN EVAP CM	PAN EVAP IN	SOLAR RADIATION LANG.	SOLAR RADIATION CM	SOLAR RADIATION IN	EVAPOTRANSPIRATION SHELTERED CENTIMETERS NO.1	SHELTERED CENTIMETERS NO.2	SHELTERED CENTIMETERS AVE.	SHELTERED INCHES AVE.	UNSHELTERED CENTIMETERS NO.3	UNSHELTERED CENTIMETERS NO.4	UNSHELTERED CENTIMETERS AVE.	UNSHELTERED INCHES AVE.
178	6/27/69	0.00	71.	27.	37.	3.06	.37	.14	665.0	1.13	.44	.43	.47	.45	.18	.17	.23	.20	.08
179	6/28/69	0.00	75.	33.	38.	4.45	.77	.31	628.3	1.06	.42	.60	.55	.58	.23	.17	.23	.20	.08
180	6/29/69	0.00	75.	33.	39.	5.42	.85	.33	659.8	1.12	.44	.70	.74	.72	.28	.17	.50	.34	.13
181	6/30/69	0.00	85.	30.	39.	4.02	.87	.34	668.5	1.13	.45	.79	.75	.77	.30	.79	.50	.64	.25
182	7/ 1/69	0.00	77.	34.	45.	4.19	.72	.28	602.0	1.02	.40	.74	.73	.73	.29	.73	.96	.84	.33
183	7/ 2/69	0.00	78.	38.	49.	3.07	.59	.23	488.3	.83	.33	.56	.61	.59	.23	.56	.96	.76	.30
184	7/ 3/69	0.00	79.	42.	50.	4.30	.61	.24	542.5	.92	.36	.42	.43	.42	.17	.42	.70	.56	.22
185	7/ 4/69	.18	68.	46.	51.	4.40	1.05	.41	406.0	.69	.27	.30	.38	.34	.13	.42	.49	.45	.18
186	7/ 5/69	.10	70.	39.	48.	2.70	.60	.24	493.5	.84	.33	.27	.26	.26	.10	.42	.49	.45	.18
187	7/ 6/69	0.00	76.	43.	42.	3.35	.60	.24	633.5	1.07	.42	.45	.38	.41	.16	.42	.49	.45	.18
188	7/ 7/69	0.00	86.	31.	39.	3.32	.60	.24	652.7	1.11	.44	.47	.48	.48	.19	.69	.67	.68	.27
189	7/ 8/69	0.00	80.	30.	40.	3.46	.66	.26	547.8	.93	.37	.55	.70	.62	.25	.61	.66	.63	.25
190	7/ 9/69	0.00	70.	36.	46.	3.46	.54	.21	385.0	.65	.26	.49	.52	.50	.20	.47	.48	.48	.19
191	7/10/69	0.00	75.	38.	46.	3.48	.66	.26	546.0	.93	.36	.52	.60	.56	.22	.56	.58	.57	.22
192	7/11/69	0.00	76.	40.	49.	3.32	.47	.19	446.2	.76	.30	.54	.52	.53	.21	.53	.48	.50	.20
193	7/12/69	0.00	70.	47.	53.	3.25	.35	.14	367.5	.62	.25	.36	.43	.39	.16	.39	.38	.39	.15
194	7/13/69	0.00	78.	41.	51.	3.31	.42	.17	574.0	.97	.38	.49	.53	.51	.20	.54	.54	.54	.21
195	7/14/69	0.00	74.	43.	53.	3.33	.45	.18	374.5	.63	.25	.27	.35	.31	.12	.29	.38	.33	.13
196	7/15/69	.13	77.	43.	50.	2.60	.43	.17	579.3	.98	.39	.32	.41	.37	.14	.63	.58	.60	.24
197	7/16/69	0.00	77.	42.	52.	3.75	.63	.25	465.5	.79	.31	.36	.42	.39	.15	.50	.48	.49	.19
198	7/17/69	0.00	76.	46.	55.	3.43	.45	.18	374.5	.63	.25	.31	.35	.33	.13	.35	.37	.36	.14
199	7/18/69	0.00	76.	48.	54.	2.90	.34	.14	427.0	.72	.28	.41	.42	.42	.16	.40	.44	.42	.17
200	7/19/69	.06	70.	51.	54.	3.41	.37	.15	288.7	.49	.19	.16	.22	.19	.08	.29	.28	.29	.11
201	7/20/69	.10	69.	51.	55.	2.62	.37	.15	304.5	.52	.20	.11	.15	.13	.05	.41	.41	.41	.16
202	7/21/69	0.00	71.	44.	48.	4.57	.14	.05	449.7	.76	.30	0.00	.43	.43	.17	.56	.13	.35	.14
203	7/22/69	0.00	77.	41.	49.	1.51	.46	.18	577.5	.98	.39	0.00	.43	.43	.17	0.00	.50	.50	.20
204	7/23/69	0.00	77.	40.	49.	2.94	.57	.22	502.2	.85	.34	0.00	.70	.70	.27	.55	.57	.56	.22
205	7/24/69	.40	73.	43.	52.	3.42	.42	.17	395.5	.67	.26	0.00	.56	.56	.22	1.46	.51	.98	.39
206	7/25/69	.05	74.	45.	54.	2.58	.42	.17	507.5	.86	.34	0.00	.42	.42	.17	.13	.51	.32	.12
207	7/26/69	0.00	76.	41.	50.	3.18	.42	.17	581.0	.98	.39	.64	.69	.66	.26	0.00	.51	.51	.20
208	7/27/69	0.00	78.	41.	49.	3.11	.42	.17	595.0	1.01	.40	.67	.73	.70	.28	.51	.51	.51	.20
209	7/28/69	.29	79.	44.	53.	3.66	.47	.19	402.5	.68	.27	.55	.47	.51	.20	1.19	.43	.81	.32
210	7/29/69	.07	78.	41.	53.	2.66	.47	.19	507.5	.86	.34	.35	.34	.34	.14	.18	.43	.30	.12
211	7/30/69	0.00	73.	53.	56.	3.27	.47	.19	372.8	.63	.25	.27	.32	.30	.12	.00	.43	.21	.08
212	7/31/69	0.00	76.	46.	51.	2.98	.49	.19	495.2	.84	.33	.35	.37	.36	.14	.32	.43	.37	.15
213	8/ 1/69	0.00	77.	45.	50.	3.42	.55	.22	544.3	.92	.36	.44	.39	.42	.16	.52	.50	.51	.20
214	8/ 2/69	0.00	81.	40.	50.	2.91	.54	.21	511.6	.87	.34	.56	.63	.60	.23	.56	.54	.55	.22
215	8/ 3/69	0.00	75.	53.	55.	3.17	.56	.22	511.6	.87	.34	.41	.52	.47	.18	.41	.39	.40	.16
216	8/ 4/69	.06	78.	45.	53.	2.79	.55	.22	511.6	.87	.34	.52	.58	.55	.22	.44	.43	.44	.17
217	8/ 5/69	.07	76.	42.	52.	2.94	.58	.23	392.0	.66	.26	.16	.24	.20	.08	.35	.59	.47	.18
218	8/ 6/69	0.00	79.	44.	50.	3.12	.60	.24	570.5	.97	.38	.29	.24	.26	.10	.27	.26	.26	.10
219	8/ 7/69	0.00	82.	40.	43.	2.96	.64	.25	584.5	.99	.39	.31	.33	.32	.13	.42	.40	.41	.16
220	8/ 8/69	0.00	82.	37.	45.	3.11	.72	.28	584.5	.99	.39	.31	.39	.35	.14	.47	.38	.43	.17
221	8/ 9/69	.04	82.	39.	48.	3.31	.83	.33	456.7	.77	.30	.35	.29	.32	.13	.51	.51	.51	.20
222	8/10/69	0.00	80.	42.	52.	2.72	.30	.12	456.7	.77	.30	.24	.29	.26	.10	.26	.23	.25	.10
223	8/11/69	.08	79.	40.	51.	2.72	.50	.20	456.7	.77	.30	.27	.16	.22	.08	.35	.35	.35	.14
224	8/12/69	1.15	74.	41.	52.	3.60	.67	.26	315.0	.53	.21	.17	.22	.19	.08	.29	0.00	.29	.11
225	8/13/69	.19	69.	44.	52.	2.65	.67	.26	453.3	.77	.30	.20	.22	.21	.08	.29	.48	.39	.15

WATER USE AND CLIMATIC DATA - GUNNISON - 1969

DAY	CALENDAR DATE	PRECIP INCHES	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN EVAP CM	PAN EVAP IN	SOLAR RADIATION LANG.	SOLAR RADIATION CM	SOLAR RADIATION IN	EVAPOTRANSPIRATION SHELTERED CENTIMETERS NO.1	SHELTERED CENTIMETERS NO.2	SHELTERED CENTIMETERS AVE.	SHELTERED INCHES AVE.	UNSHELTERED CENTIMETERS NO.3	UNSHELTERED CENTIMETERS NO.4	UNSHELTERED CENTIMETERS AVE.	UNSHELTERED INCHES AVE.
226	8/14/69	0.00	72.	48.	49.	3.59	.67	.26	453.3	.77	.30	.21	.26	.23	.09	.29	0.00	.29	.11
227	8/15/69	0.00	75.	37.	44.	3.14	.67	.26	540.8	.92	.36	.34	.35	.35	.14	.29	0.00	.29	.11
228	8/16/69	0.00	78.	38.	46.	2.48	.38	.15	362.3	.61	.24	.29	.29	.29	.11	.29	0.00	.29	.11
229	8/17/69	.03	70.	39.	49.	3.96	.38	.15	362.3	.61	.24	.26	.30	.28	.11	.30	.08	.19	.07
230	8/18/69	.16	68.	40.	51.	3.07	.38	.15	362.3	.61	.24	.27	.21	.24	.09	.21	.30	.25	.10
231	8/19/69	.08	68.	42.	52.	3.51	.38	.15	343.0	.58	.23	.21	.22	.22	.08	.21	.20	.20	.08
232	8/20/69	0.00	68.	38.	47.	3.11	.38	.15	343.0	.58	.23	.20	.25	.22	.09	.21	0.00	.21	.08
233	8/21/69	0.00	74.	35.	47.	3.39	.73	.29	504.0	.85	.34	.27	.31	.29	.11	.21	0.00	.21	.08
234	8/22/69	0.00	76.	40.	47.	3.26	.48	.19	504.0	.85	.34	.22	.36	.29	.11	.36	0.00	.36	.14
235	8/23/69	0.00	72.	46.	51.	4.21	.33	.13	339.5	.58	.23	.23	.38	.30	.12	.33	.32	.32	.13
236	8/24/69	0.00	77.	36.	48.	3.20	.47	.18	486.5	.82	.32	.18	.20	.19	.07	.27	.26	.27	.11
237	8/25/69	0.00	78.	38.	45.	4.18	.41	.16	511.0	.87	.34	.24	.36	.30	.12	0.00	.48	.48	.19
238	8/26/69	0.00	80.	39.	45.	3.82	.70	.27	486.5	.82	.32	0.00	.37	.37	.15	0.00	.47	.47	.18
239	8/27/69	0.00	80.	39.	47.	3.97	.60	.23	476.0	.81	.32	0.00	.32	.32	.13	0.00	.47	.47	.18
240	8/28/69	.02	77.	44.	53.	4.51	1.19	.47	388.5	.66	.26	0.00	.34	.34	.13	0.00	.45	.45	.18
241	8/29/69	.05	70.	45.	52.	4.09	.41	.16	343.0	.58	.23	0.00	.20	.20	.08	.23	.24	.24	.09
242	8/30/69	.03	69.	44.	48.	2.60	.30	.12	381.5	.65	.25	.34	.22	.28	.11	.23	.24	.24	.09
243	8/31/69	0.00	73.	35.	42.	3.85	.43	.17	497.0	.84	.33	.29	.28	.28	.11	.23	.43	.33	.13
244	9/ 1/69	0.00	75.	38.	44.	4.30	.55	.21	425.3	.72	.28	.32	.26	.29	.11	.39	.35	.37	.15
245	9/ 2/69	0.00	74.	33.	41.	3.28	.38	.15	460.3	.78	.31	.24	.23	.23	.09	.31	.33	.32	.13
246	9/ 3/69	0.00	70.	35.	41.	3.83	.52	.21	406.0	.69	.27	.23	.19	.21	.08	.31	.33	.32	.13
247	9/ 4/69	0.00	69.	44.	47.	4.13	.40	.16	388.5	.66	.26	.18	.28	.23	.09	.31	.25	.28	.11
248	9/ 5/69	.03	70.	41.	45.	4.13	.51	.20	451.5	.77	.30	.17	.24	.21	.08	.31	.25	.28	.11
249	9/ 6/69	0.00	74.	32.	41.	3.15	.42	.16	340.2	.58	.23	.36	.17	.27	.11	.35	.25	.30	.12
250	9/ 7/69	0.00	72.	36.	45.	4.12	.52	.20	340.2	.58	.23	.09	.20	.15	.06	.24	.50	.37	.15
251	9/ 8/69	0.00	65.	39.	48.	3.47	.26	.10	340.2	.58	.23	.07	.15	.11	.04	.45	.18	.31	.12
252	9/ 9/69	.37	62.	36.	47.	3.47	.31	.12	340.2	.58	.23	.04	.12	.08	.03	.94	.94	.94	.37
253	9/10/69	0.00	67.	34.	43.	3.12	.31	.12	340.2	.58	.23	.05	.20	.12	.05	0.00	0.00	0.00	0.00
254	9/11/69	.34	67.	36.	46.	3.01	.31	.12	309.8	.53	.21	.05	.10	.07	.03	0.00	.86	.86	.34
255	9/12/69	0.00	68.	38.	43.	3.35	.31	.12	437.5	.74	.29	.03	.21	.12	.05	0.00	0.00	0.00	0.00
256	9/13/69	.03	62.	33.	43.	3.37	.42	.17	281.7	.48	.19	.04	.01	.03	.01	0.00	0.00	0.00	0.00
257	9/14/69	0.00	63.	32.	42.	2.57	.17	.07	281.7	.48	.19	.04	.06	.05	.02	0.00	0.00	0.00	0.00
258	9/15/69	.07	64.	36.	45.	3.46	.17	.07	281.7	.48	.19	.03	.05	.04	.02	0.00	0.00	0.00	0.00
259	9/16/69	.18	58.	33.	43.	3.03	.17	.07	262.5	.44	.18	.02	.03	.02	.01	0.00	0.00	0.00	0.00
260	9/17/69	.17	59.	34.	43.	3.33	.17	.07	262.5	.44	.18	.04	.03	.03	.01	0.00	0.00	0.00	0.00
261	9/18/69	0.00	73.	30.	38.	2.70	.17	.07	390.3	.66	.26	.01	.02	.01	.01	0.00	0.00	0.00	0.00
262	9/19/69	0.00	87.	33.	42.	3.12	.39	.15	435.7	.74	.29	.02	.22	.12	.05	0.00	0.00	0.00	0.00
263	9/20/69	.12	59.	37.	47.	4.13	.29	.11	229.3	.39	.15	.02	.02	.02	.01	0.00	0.00	0.00	0.00
264	9/21/69	.08	59.	36.	42.	2.84	.29	.11	290.5	.49	.19	.01	.00	.00	.00	0.00	0.00	0.00	0.00
265	9/22/69	.25	58.	36.	37.	2.33	.29	.11	378.9	.64	.25	.01	.01	.01	.00	0.00	0.00	0.00	0.00
266	9/23/69	0.00	63.	23.	31.	3.57	.29	.11	378.9	.64	.25	.00	.03	.02	.01	0.00	0.00	0.00	0.00
267	9/24/69	0.00	65.	23.	32.	3.58	.29	.11	407.8	.69	.27	.02	.04	.03	.01	0.00	0.00	0.00	0.00
268	9/25/69	0.00	67.	25.	32.	3.75	.57	.22	412.1	.70	.28	.02	.03	.03	.01	0.00	0.00	0.00	0.00
269	9/26/69	0.00	85.	24.	35.	2.92	.21	.08	412.1	.70	.28	.02	.03	.02	.01	0.00	0.00	0.00	0.00
270	9/27/69	0.00	72.	26.	36.	3.30	0.00	0.00	392.0	.66	.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
271	9/28/69	0.00	68.	33.	37.	3.59	0.00	0.00	372.7	.63	.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
272	9/29/69	0.00	74.	25.	33.	3.13	0.00	0.00	418.2	.71	.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
273	9/30/69	0.00	58.	30.	41.	4.02	0.00	0.00	154.0	.26	.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

274	10/ 1/69	0.00	62.	28.	35.	3.13	0.00	0.00	350.0	.59	.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
275	10/ 2/69	0.00	66.	22.	32.	4.21	0.00	0.00	353.5	.60	.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
276	10/ 3/69	.92	34.	30.	33.	4.55	0.00	0.00	141.8	.24	.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
277	10/ 4/69	.55	34.	28.	29.	2.18	0.00	0.00	217.0	.37	.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
278	10/ 5/69	0.00	48.	14.	21.	1.82	0.00	0.00	322.0	.55	.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
279	10/ 6/69	0.00	39.	12.	22.	2.17	0.00	0.00	371.9	.63	.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
280	10/ 7/69	0.00	49.	13.		2.17	0.00	0.00	371.9	.63	.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

GUNNISON – 1970

WATER USE AND CLIMATIC DATA - GUNNISON - 1970

DAY	CALENDAR DATE	PRECIP INCHES	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN CM	PAN EVAP IN	SOLAR RADIATION LANG.	SOLAR RADIATION CM	SOLAR RADIATION IN	EVAPOTRANSPIRATION SHELTERED CENTIMETERS NO.1	SHELTERED CENTIMETERS NO.2	SHELTERED CENTIMETERS AVE.	SHELTERED INCHES AVE.	UNSHELTERED CENTIMETERS NO.3	UNSHELTERED CENTIMETERS NO.4	UNSHELTERED CENTIMETERS AVE.	UNSHELTERED INCHES AVE.
116	4/26/70	0.00	67.	22.		0.00	0.00	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
117	4/27/70	0.00	54.	22.		3.57	0.00	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
118	4/28/70	.06	38.	24.	16.	6.81	.63	.25	0.0	0.00	0.00	0.00	.10	.10	.04	.37	.39	.38	.15
119	4/29/70	0.00	32.	13.	16.	4.40	.28	.11	453.3	.77	.30	0.00	.09	.09	.03	.24	.20	.22	.09
120	4/30/70	0.00	43.	13.	17.	4.53	.44	.17	535.5	.91	.36	0.00	.12	.12	.05	.31	.30	.31	.12
121	5/ 1/70	0.00	39.	15.	16.	6.40	.39	.15	544.3	.92	.36	0.00	.11	.11	.04	.34	.30	.32	.12
122	5/ 2/70	0.00	47.	13.	17.	4.22	.23	.09	745.5	1.26	.50	0.00	.14	.14	.05	.31	.32	.32	.12
123	5/ 3/70	0.00	59.	18.	22.	4.12	.41	.16	694.8	1.18	.46	0.00	.07	.07	.03	.32	.31	.31	.12
124	5/ 4/70	0.00	60.	20.	23.	3.85	.70	.28	659.8	1.12	.44	0.00	.04	.04	.01	.32	.28	.30	.12
125	5/ 5/70	0.00	63.	23.	24.	3.69	.57	.23	591.5	1.00	.39	0.00	.03	.03	.01	.28	.27	.27	.11
126	5/ 6/70	0.00	62.	26.	26.	3.87	.55	.22	467.3	.79	.31	0.00	.02	.02	.01	.27	.18	.23	.09
127	5/ 7/70	0.00	56.	25.	21.	5.72	.81	.32	598.5	1.01	.40	0.00	.03	.03	.01	.51	.33	.42	.16
128	5/ 8/70	0.00	47.	23.	24.	6.02	.52	.20	474.3	.80	.32	.14	.22	.18	.07	.38	.29	.34	.13
129	5/ 9/70	.10	46.	20.	32.	4.50	.62	.25	514.5	.87	.34	.19	.10	.14	.06	.49	.49	.49	.19
130	5/10/70	.07	61.	28.	23.	2.57	.53	.21	514.5	.87	.34	.22	.15	.18	.07	.21	.19	.20	.08
131	5/11/70	0.00	63.	32.	23.	6.39	.43	.17	635.3	1.08	.42	.38	.20	.29	.11	.58	.67	.63	.25
132	5/12/70	0.00	61.	25.	22.	6.10	.92	.36	666.8	1.13	.44	.44	.30	.37	.14	.71	.68	.69	.27
133	5/13/70	0.00	65.	25.	24.	6.18	.75	.29	684.2	1.16	.46	.43	.35	.39	.15	.68	.69	.68	.27
134	5/14/70	0.00	60.	26.	28.	7.31	.93	.37	693.0	1.17	.46	.49	.43	.46	.18	.63	.64	.64	.25
135	5/15/70	0.00	58.	22.	25.	6.67	.56	.22	729.7	1.24	.49	.42	.37	.40	.16	.53	.54	.54	.21
136	5/16/70	0.00	70.	27.	31.	4.26	.52	.20	736.8	1.25	.49	.36	.36	.36	.14	.53	.43	.48	.19
137	5/17/70	0.00	71.	29.	29.	5.06	.76	.30	712.2	1.21	.48	.38	.34	.36	.14	.32	.50	.41	.16
138	5/18/70	0.00	72.	31.	32.	3.82	.77	.30	546.9	.93	.36	.39	.30	.34	.14	.55	.40	.48	.19
139	5/19/70	0.00	70.	32.	37.	4.07	.68	.27	546.9	.93	.36	.36	.28	.32	.13	.38	.43	.40	.16
140	5/20/70	0.00	68.	31.	34.	4.22	.64	.25	568.8	.96	.38	.36	.36	.36	.14	.43	.45	.44	.17
141	5/21/70	0.00	70.	32.	29.	4.24	.58	.23	696.5	1.18	.46	.48	.39	.43	.17	.49	.48	.49	.19
142	5/22/70	0.00	68.	28.	30.	5.08	.81	.32	731.5	1.24	.49	.48	.36	.42	.17	.41	.48	.45	.18
143	5/23/70	0.00	67.	28.	33.	4.38	.63	.25	654.5	1.11	.44	.43	.43	.43	.17	.48	.43	.45	.18
144	5/24/70	0.00	69.	30.	33.	4.43	.65	.25	568.8	.96	.38	.46	.41	.44	.17	.56	.42	.49	.19
145	5/25/70	0.00	67.	31.	32.	4.73	.33	.13	554.7	.94	.37	.36	.34	.35	.14	.33	.40	.37	.14
146	5/26/70	0.00	65.	36.	37.	5.20	1.04	.41	546.0	.93	.36	.45	.36	.40	.16	.37	.41	.39	.15
147	5/27/70	0.00	65.	32.	40.	3.90	.44	.17	444.5	.75	.30	.43	.36	.39	.15	.39	.36	.37	.15
148	5/28/70	0.00	60.	34.	42.	4.14	.41	.16	441.0	.75	.29	.30	.25	.28	.11	.22	.23	.23	.09
149	5/29/70	.07	61.	38.	39.	3.74	.36	.14	383.3	.65	.26	.30	.25	.28	.11	.39	.35	.37	.15
150	5/30/70	0.00	68.	34.	32.	4.08	.36	.14	700.0	1.19	.47	.52	.32	.42	.17	.29	.39	.34	.13

WATER USE AND CLIMATIC DATA - GUNNISON - 1970

DAY	CALENDAR DATE	PRECIP INCHES	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN EVAP CM	PAN EVAP IN	SOLAR RADIATION LANG.	SOLAR RADIATION CM	SOLAR RADIATION IN	EVAPOTRANSPIRATION SHELTERED CENTIMETERS NO.1	SHELTERED CENTIMETERS NO.2	SHELTERED CENTIMETERS AVE.	SHELTERED INCHES AVE.	UNSHELTERED CENTIMETERS NO.3	UNSHELTERED CENTIMETERS NO.4	UNSHELTERED CENTIMETERS AVE.	UNSHELTERED INCHES AVE.
151	5/31/70	0.00	53.	36.	30.	8.85	1.04	.41	701.7	1.19	.47	.67	.46	.57	.22	.70	.60	.65	.26
152	6/ 1/70	0.00	57.	25.	27.	5.63	.58	.23	773.5	1.31	.52	.56	.42	.49	.19	.48	.48	.48	.19
153	6/ 2/70	0.00	63.	28.	30.	6.48	.80	.31	778.8	1.32	.52	.63	.54	.59	.23	.60	.58	.59	.23
154	6/ 3/70	0.00	67.	34.	38.	5.38	.66	.26	735.0	1.25	.49	.63	.61	.62	.24	.60	.58	.59	.23
155	6/ 4/70	0.00	60.	35.	38.	4.28	.50	.20	404.2	.69	.27	.34	.44	.39	.15	.34	.31	.33	.13
156	6/ 5/70	0.00	66.	32.	37.	3.32	.37	.14	724.5	1.23	.48	.51	.56	.53	.21	.40	.44	.42	.16
157	6/ 6/70	.08	63.	33.	40.	4.29	.70	.27	591.5	1.00	.39	.40	.50	.45	.18	.63	.61	.62	.24
158	6/ 7/70	0.00	59.	38.	44.	4.15	.26	.10	360.5	.61	.24	.19	.20	.19	.08	.15	.10	.13	.05
159	6/ 8/70	.02	60.	44.	44.	3.28	.25	.10	323.7	.55	.22	.18	.16	.17	.07	.19	.21	.20	.08
160	6/ 9/70	0.00	58.	37.	41.	3.50	.20	.08	365.8	.62	.24	.17	.13	.15	.06	.15	.14	.14	.06
161	6/10/70	.20	56.	41.	43.	4.32	.40	.16	400.7	.68	.27	.06	.10	.08	.03	.40	.39	.39	.15
162	6/11/70	.15	50.	39.	37.	4.79	.40	.16	357.0	.61	.24	.06	.10	.08	.03	.40	.39	.39	.15
163	6/12/70	0.00	61.	33.	32.	3.92	.40	.16	735.0	1.25	.49	.06	.10	.08	.03	.40	.39	.39	.15
164	6/13/70	0.00	69.	37.	34.	6.43	.40	.16	700.0	1.19	.47	.59	.10	.35	.14	.40	.39	.39	.15
165	6/14/70	0.00	68.	37.	37.	4.75	.63	.25	735.0	1.25	.49	.62	.41	.52	.20	.58	.61	.60	.23
166	6/15/70	0.00	68.	34.	31.	2.50	.76	.30	782.2	1.33	.52	0.00	.45	.45	.18	.68	.57	.63	.25
167	6/16/70	0.00	70.	31.	31.	1.93	.74	.29	787.5	1.33	.53	0.00	.51	.51	.20	.68	.65	.66	.26
168	6/17/70	0.00	73.	33.	35.	4.56	.61	.24	782.2	1.33	.52	0.00	.51	.51	.20	.71	.71	.71	.28
169	6/18/70	0.00	74.	36.	37.	4.01	.75	.29	782.3	1.33	.52	.67	0.00	.67	.26	.61	.66	.64	.25
170	6/19/70	0.00	71.	35.	40.	4.06	.75	.30	764.7	1.30	.51	.70	0.00	.70	.27	.66	.64	.65	.25
171	6/20/70	0.00	76.	37.	44.	4.60	.48	.19	750.7	1.27	.50	.61	0.00	.61	.24	.64	.57	.60	.24
172	6/21/70	0.00	69.	45.	48.	3.12	.54	.21	432.3	.73	.29	.34	0.00	.34	.13	.34	.35	.35	.14
173	6/22/70	0.00	75.	42.	49.	7.27	.51	.20	609.0	1.03	.41	.38	0.00	.38	.15	.44	.52	.48	.19
174	6/23/70	0.00	74.	42.	46.	3.60	.53	.21	694.8	1.18	.46	.58	0.00	.58	.23	.59	.54	.56	.22
175	6/24/70	0.00	78.	40.	47.	3.99	.59	.23	740.2	1.25	.49	.66	0.00	.66	.26	0.00	.64	.64	.25
176	6/25/70	0.00	77.	42.	41.	4.30	.78	.31	771.7	1.31	.51	.68	0.00	.68	.27	0.00	.63	.63	.25
177	6/26/70	0.00	82.	42.	46.	3.13	.51	.20	742.0	1.26	.50	.63	0.00	.63	.25	.69	.67	.68	.27
178	6/27/70	0.00	81.	45.	48.	3.16	.57	.22	560.0	.95	.37	.55	0.00	.55	.22	.51	.47	.49	.19
179	6/28/70	.10	80.	46.	49.	3.69	.79	.31	743.8	1.26	.50	0.00	.71	.71	.28	.86	.86	.86	.34
180	6/29/70	.04	72.	46.	49.	2.99	.23	.09	367.5	.62	.25	0.00	.45	.45	.18	.20	.19	.19	.08
181	6/30/70	0.00	72.	46.	33.	3.16	.47	.19	771.7	1.31	.51	0.00	.57	.57	.23	.41	.40	.40	.16
182	7/ 1/70	0.00	74.	35.	39.	3.29	.61	.24	651.0	1.10	.43	0.00	.65	.65	.26	.56	.53	.55	.22
183	7/ 2/70	0.00	78.	40.	43.	3.29	.39	.15	680.8	1.15	.45	.58	.55	.56	.22	.50	.43	.46	.18
184	7/ 3/70	0.00	79.	42.	46.	3.93	.73	.29	609.0	1.03	.41	.64	.69	.66	.26	.56	.64	.60	.23
185	7/ 4/70	0.00	76.	42.	48.	3.66	.43	.17	491.8	.83	.33	.45	.48	.46	.18	.52	.41	.46	.18
186	7/ 5/70	.30	73.	41.	49.	3.09	1.04	.41	540.8	.92	.36	.35	.39	.37	.15	.51	.50	.51	.20
187	7/ 6/70	0.00	73.	46.	51.	2.97	.63	.25	540.7	.92	.36	.34	.33	.34	.13	.51	.50	.51	.20
188	7/ 7/70	.10	73.	50.	52.	2.25	.44	.17	654.5	1.11	.44	.43	.55	.49	.19	.51	.50	.51	.20
189	7/ 8/70	.17	76.	49.	53.	2.48	.88	.35	584.5	.99	.39	.44	.53	.48	.19	.51	.50	.51	.20
190	7/ 9/70	.22	72.	50.	55.	3.30	.40	.16	547.7	.93	.37	.41	.43	.42	.17	.41	.39	.40	.16
191	7/10/70	.03	71.	48.	52.	2.40	.40	.16	477.8	.81	.32	.34	.40	.37	.14	.41	.39	.40	.16
192	7/11/70	.52	71.	44.	50.	3.61	.40	.16	526.8	.89	.35	.35	.45	.40	.16	.41	.39	.40	.16
193	7/12/70	0.00	72.	45.	49.	3.61	.40	.16	740.2	1.25	.49	.49	.60	.54	.21	.41	.39	.40	.16
194	7/13/70	0.00	77.	41.	44.	2.78	.40	.16	763.0	1.29	.51	.58	.66	.62	.24	.41	.39	.40	.16
195	7/14/70	0.00	79.	41.	45.	2.94	.40	.16	689.5	1.17	.46	.59	.66	.62	.24	.41	.39	.40	.16
196	7/15/70	0.00	78.	45.	48.	4.12	.53	.21	735.0	1.25	.49	.61	.77	.69	.27	.68	.47	.58	.23
197	7/16/70	0.00	80.	43.	49.	3.38	.50	.20	721.0	1.22	.48	.66	.75	.70	.28	.59	.49	.54	.21
198	7/17/70	.03	78.	45.	52.	2.92	.55	.22	581.0	.98	.39	.52	.61	.57	.22	.56	.47	.51	.20

WATER USE AND CLIMATIC DATA - GUNNISON - 1970

DAY	CALENDAR DATE	PRECIP INCHES	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN EVAP CM	PAN EVAP IN	SOLAR RADIATION LANG.	SOLAR RADIATION CM	SOLAR RADIATION IN	EVAPOTRANSPIRATION SHELTERED CENTIMETERS NO.1	SHELTERED NO.2	SHELTERED AVE.	SHELTERED INCHES AVE.	UNSHELTERED CENTIMETERS NO.3	UNSHELTERED NO.4	UNSHELTERED AVE.	UNSHELTERED INCHES AVE.
199	7/18/70	0.00	74.	45.	51.	3.47	.44	.17	476.0	.81	.32	.35	.37	.36	.14	.33	.29	.31	.12
200	7/19/70	0.00	80.	42.	48.	2.97	.23	.09	651.0	1.10	.43	.31	.46	.39	.15	.40	.24	.32	.13
201	7/20/70	0.00	77.	44.	45.	3.19	.42	.17	719.2	1.22	.48	.45	.63	.54	.21	.49	.47	.48	.19
202	7/21/70	.08	73.	43.	49.	2.74	.66	.26	504.0	.85	.34	.37	.41	.39	.15	.58	.57	.58	.23
203	7/22/70	0.00	70.	48.	55.	2.60	.18	.07	330.8	.56	.22	.16	.20	.18	.07	.10	.15	.13	.05
204	7/23/70	.22	71.	52.	46.	3.04	.20	.08	722.8	1.23	.48	.41	.53	.47	.19	.60	.60	.60	.24
205	7/24/70	0.00	74.	43.	44.	2.74	.46	.18	633.5	1.07	.42	.48	.58	.53	.21	.33	.45	.39	.15
206	7/25/70	.06	72.	45.	49.	2.37	.51	.20	437.5	.74	.29	.29	.30	.29	.12	.40	.57	.48	.19
207	7/26/70	0.00	75.	42.	48.	2.38	.12	.05	584.5	.99	.39	.36	.76	.56	.22	.24	.16	.20	.08
208	7/27/70	.06	70.	42.	46.	3.66	.52	.21	484.7	.82	.32	.31	.29	.30	.12	.50	.38	.44	.17
209	7/28/70	0.00	73.	42.	49.	2.73	.16	.06	589.7	1.00	.39	.25	.32	.29	.11	.21	.32	.26	.10
210	7/29/70	0.00	76.	42.	44.	2.32	.21	.08	698.2	1.18	.47	.33	.38	.35	.14	.29	.32	.30	.12
211	7/30/70	0.00	77.	40.	44.	2.73	.39	.15	798.0	1.35	.53	.41	.53	.47	.18	.41	.32	.36	.14
212	7/31/70	0.00	79.	43.	46.	3.08	.45	.18	271.2	.46	.18	.48	.61	.55	.22	.48	.48	.48	.19
213	8/ 1/70	0.00	81.	43.	45.	2.59	.42	.17	619.5	1.05	.41	.44	.58	.51	.20	.40	.40	.40	.16
214	8/ 2/70	0.00	80.	45.	51.	4.02	.49	.19	579.2	.98	.39	.45	.49	.47	.19	.46	.36	.41	.16
215	8/ 3/70	0.00	78.	52.	53.	2.80	.31	.12	481.3	.82	.32	.36	.34	.35	.14	.32	.29	.30	.12
216	8/ 4/70	.32	76.	52.	56.	2.38	.39	.15	544.3	.92	.36	.38	.35	.36	.14	.89	.35	.62	.24
217	8/ 5/70	.04	78.	46.	51.	2.10	.39	.15	574.0	.97	.38	.35	.44	.40	.16	.15	.35	.25	.10
218	8/ 6/70	0.00	70.	49.	54.	1.75	.42	.16	266.0	.45	.18	.18	.69	.43	.17	.06	.35	.21	.08
219	8/ 7/70	0.00	76.	48.	52.	3.05	.41	.16	686.0	1.16	.46	.40	.51	.46	.18	.35	0.00	.35	.14
220	8/ 8/70	.35	76.	47.	49.	3.15	.89	.35	554.8	.94	.37	.24	.31	.27	.11	.35	.89	.62	.24
221	8/ 9/70	0.00	78.	43.	44.	2.77	.19	.07	558.3	.95	.37	.31	.30	.30	.12	.35	0.00	.35	.14
222	8/10/70	0.00	82.	41.	40.	3.39	.66	.26	677.3	1.15	.45	.43	.27	.35	.14	.35	0.00	.35	.14
223	8/11/70	0.00	80.	38.	38.	2.65	.64	.25	684.2	1.16	.46	.40	.54	.47	.19	.43	0.00	.43	.17
224	8/12/70	0.00	79.	37.	40.	3.53	.74	.29	617.7	1.05	.41	.38	.46	.42	.17	.37	1.56	.97	.38
225	8/13/70	0.00	80.	39.	40.	3.55	.53	.21	586.3	.99	.39	.41	.54	.48	.19	.36	.42	.39	.15
226	8/14/70	0.00	74.	40.	48.	3.97	.57	.22	388.5	.66	.26	.70	.37	.53	.21	.25	.30	.27	.11
227	8/15/70	.63	58.	47.	49.	3.61	.41	.16	99.8	.17	.07	.07	.06	.06	.03	.39	.38	.38	.15
228	8/16/70	0.00	73.	41.	46.	2.63	.41	.16	560.0	.95	.37	.15	.17	.16	.06	.39	.38	.38	.15
229	8/17/70	.08	74.	44.	47.	4.14	.41	.16	582.7	.99	.39	.35	.27	.31	.12	.39	.38	.38	.15
230	8/18/70	0.00	76.	42.	46.	3.07	.41	.16	546.0	.93	.36	.23	.26	.24	.10	.39	.38	.38	.15
231	8/19/70	.03	76.	49.	51.	2.88	.41	.16	323.8	.55	.22	.21	.24	.22	.09	.39	.38	.38	.15
232	8/20/70	.03	67.	48.	54.	2.23	.29	.11	393.8	.67	.26	.12	.15	.14	.05	.64	.30	.47	.19
233	8/21/70	.16	71.	50.	51.	2.94	.29	.11	364.0	.62	.24	.15	.18	.17	.07	.69	.30	.49	.19
234	8/22/70	0.00	72.	42.	47.	2.79	.29	.11	458.5	.78	.31	.15	.24	.20	.08	.34	.30	.32	.13
235	8/23/70	0.00	70.	39.	44.	3.61	.47	.19	495.2	.84	.33	.16	.25	.20	.08	.28	.30	.29	.11
236	8/24/70	0.00	77.	38.	43.	3.72	.46	.18	609.0	1.03	.41	.35	.29	.32	.13	.39	.30	.35	.14
237	8/25/70	0.00	78.	38.	44.	2.70	.51	.20	607.3	1.03	.41	.27	.35	.31	.12	.45	.46	.45	.18
238	8/26/70	.02	76.	40.	45.	2.84	.73	.29	406.0	.69	.27	.26	.27	.27	.10	.49	.33	.41	.16
239	8/27/70	.15	77.	42.	48.	3.34	.75	.30	539.0	.91	.36	.26	.31	.29	.11	.58	.35	.46	.18
240	8/28/70	0.00	76.	41.	46.	3.34	.06	.02	542.5	.92	.36	.26	.27	.27	.11	.06	.35	.20	.08
241	8/29/70	0.00	78.	41.	46.	3.24	.55	.22	596.7	1.01	.40	.26	.36	.31	.12	.26	.35	.30	.12
242	8/30/70	0.00	76.	51.	49.	3.49	.56	.22	402.5	.68	.27	.26	.30	.28	.11	.33	.35	.34	.13
243	8/31/70	.05	75.	40.	46.	3.72	.36	.14	402.5	.68	.27	.26	.27	.27	.10	.36	.46	.41	.16
244	9/ 1/70	0.00	65.	42.	49.	4.37	.44	.17	353.5	.60	.24	.26	.25	.26	.10	.26	.24	.25	.10
245	9/ 2/70	.12	66.	38.	44.	3.52	.73	.29	437.5	.74	.29	.45	.23	.34	.13	.46	.50	.48	.19

WATER USE AND CLIMATIC DATA - GUNNISON - 1970

DAY	CALENDAR DATE	PRECIP INCHES	TEMPERATURE MAX	TEMPERATURE MIN	DEW POINT	AVE WIND SPEED-MPH	PAN EVAP CM	PAN EVAP IN	SOLAR RADIATION LANG.	SOLAR RADIATION CM	SOLAR RADIATION IN	EVAPOTRANSPIRATION SHELTERED CENTIMETERS NO.1	SHELTERED CENTIMETERS NO.2	SHELTERED CENTIMETERS AVE.	SHELTERED INCHES AVE.	UNSHELTERED CENTIMETERS NO.3	UNSHELTERED CENTIMETERS NO.4	UNSHELTERED CENTIMETERS AVE.	UNSHELTERED INCHES AVE.
246	9/ 3/70	0.00	71.	37.	35.	3.72	.30	.12	493.5	.84	.33	.47	.39	.43	.17	.18	.29	.24	.09
247	9/ 4/70	.20	51.	35.	40.	3.47	.41	.16	255.5	.43	.17	.12	.19	.16	.06	.29	.29	.29	.11
248	9/ 5/70	.18	59.	40.	47.	2.57	.41	.16	340.4	.58	.23	.08	.22	.15	.06	.29	.29	.29	.11
249	9/ 6/70	.74	56.	44.	40.	4.76	.41	.16	340.4	.58	.23	.26	.22	.24	.09	.29	.29	.29	.11
250	9/ 7/70	0.00	66.	35.	39.	2.42	.41	.16	588.0	1.00	.39	.36	.22	.29	.11	.29	.29	.29	.11
251	9/ 8/70	0.00	70.	35.	41.	3.46	.41	.16	574.0	.97	.38	.72	.22	.47	.18	.29	.29	.29	.11
252	9/ 9/70	0.00	69.	36.	39.	4.32	.41	.16	822.5	1.39	.55	.41	.37	.39	.15	.29	.29	.29	.11
253	9/10/70	0.00	71.	33.	37.	4.25	.54	.21	822.5	1.39	.55	.43	.39	.41	.16	.43	.45	.44	.17
254	9/11/70	0.00	71.	34.	39.	4.46	.57	.22	324.8	.55	.22	.32	.30	.31	.12	.43	.40	.42	.16
255	9/12/70	.77	62.	36.	44.	3.71	.28	.11	324.8	.55	.22	.16	.16	.16	.06	.12	.24	.18	.07
256	9/13/70	.58	63.	44.	49.	2.99	.28	.11	324.8	.55	.22	.08	.05	.06	.03	.12	.24	.18	.07
257	9/14/70	0.00	65.	36.	40.	4.69	.28	.11	324.8	.55	.22	.14	.21	.17	.07	.12	.24	.18	.07
258	9/15/70	0.00	67.	29.	30.	3.24	.44	.17	324.8	.55	.22	.25	.36	.31	.12	.41	.24	.32	.13
259	9/16/70	0.00	63.	32.	30.	4.47	.56	.22	421.7	.71	.28	.40	.31	.35	.14	.44	.38	.41	.16
260	9/17/70	0.00	68.	28.	32.	3.60	.33	.13	553.0	.94	.37	.30	.33	.31	.12	.35	.36	.36	.14
261	9/18/70	0.00	69.	30.	35.	3.27	.43	.17	530.2	.90	.35	.28	.28	.28	.11	.36	.34	.35	.14
262	9/19/70	0.00	69.	40.	40.	3.69	.43	.17	469.0	.79	.31	.25	.21	.23	.09	.29	.34	.32	.12
263	9/20/70	0.00	66.	35.	30.	5.32	.64	.25	523.2	.89	.35	.28	.41	.34	.13	.35	.34	.35	.14
264	9/21/70	.14	61.	27.	30.	4.03	.82	.32	286.1	.48	.19	.28	.25	.26	.10	.71	.34	.53	.21
265	9/22/70	.06	49.	37.	36.	3.00	.20	.08	286.1	.48	.19	.15	.21	.18	.07	.16	.34	.25	.10
266	9/23/70	0.00	63.	25.	32.	3.28	.20	.08	290.5	.49	.19	.23	.24	.23	.09	.16	.34	.25	.10
267	9/24/70	0.00	61.	27.	28.	5.22	.20	.08	430.5	.73	.29	.30	.27	.29	.11	.16	.34	.25	.10
268	9/25/70	0.00	47.	25.	25.	6.35	.41	.16	430.5	.73	.29	.22	.24	.23	.09	.21	.22	.22	.09
269	9/26/70	0.00	58.	19.	22.	3.33	.23	.09	430.5	.73	.29	.17	.21	.19	.07	.22	.28	.25	.10
270	9/27/70	0.00	64.	21.	28.	2.63	.26	.10	430.5	.73	.29	.15	.23	.19	.07	.20	.28	.24	.09
271	9/28/70	0.00	64.	25.	31.	2.89	.21	.08	430.5	.73	.29	.18	.20	.19	.07	.23	.28	.25	.10

II. MONTHLY TOTALS AND AVERAGES — CLIMATE AND E_t MEASUREMENTS

GARO — 1968

MONTHLY AVERAGES OF SOUTH PARK ET DATA

MONTH 5 1968

AVG. WIND SPEED-
ANEM 1= 7.22 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE= 38.96 DEG F

TOTAL PRECIPITATION= .11 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	7.33	2.88	.25	.10
2	5.55	2.19	.25	.10
3	6.78	2.67	.27	.11
4	7.66	3.02	.32	.13
CLASS A EVAP	9.23	3.64	.40	.16

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL= 24.07 CM = 9.481N AVG= 1.00 CM/DAY = .39 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL= 7.06 CM = 2.781N AVG= .24 CM/DAY = .10 IN/DAY

AVE ET FROM LYS 3 AND 4
TOTAL= 7.26 CM = 2.861N AVG= .29 CM/DAY = .11 IN/DAY
NOTE----TOTALS FOR THIS MONTH INCLUDE ONLY 29. DAYS.

MONTH 6 1968

AVG. WIND SPEED-
ANEM 1= 6.23 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE= 50.73 DEG F

TOTAL PRECIPITATION= .18 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	17.53	6.90	.60	.24
2	17.88	7.04	.62	.24
3	13.94	5.49	.52	.20
4	17.60	6.93	.61	.24
CLASS A EVAP	17.36	6.83	.60	.24

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL= 33.11 CM = 13.031N AVG= 1.10 CM/DAY = .43 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL= 17.70 CM = 6.97IN AVG= .61 CM/DAY = .24 IN/DAY

AVE ET FROM LYS 3 AND 4
TOTAL= 17.04 CM = 6.71IN AVG= .57 CM/DAY = .22 IN/DAY

MONTH 7 1968

AVG. WIND SPEED-
ANEM 1= 3.97 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE= 54.90 DEG F

TOTAL PRECIPITATION= 2.76 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	15.68	6.17	.51	.20
2	16.39	6.45	.53	.21
3	15.67	6.17	.51	.20
4	15.13	5.95	.50	.20
CLASS A EVAP	16.08	6.33	.52	.20

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL= 27.94 CM = 11.001N AVG= .90 CM/DAY = .35 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL= 16.03 CM = 6.31IN AVG= .52 CM/DAY = .20 IN/DAY

AVE ET FROM LYS 3 AND 4
TOTAL= 15.73 CM = 6.19IN AVG= .51 CM/DAY = .20 IN/DAY

MONTH 8 1968

AVG. WIND SPEED-
ANEM 1= 4.26 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE= 51.69 DEG F

TOTAL PRECIPITATION= 2.72 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	8.90	3.50	.29	.11
2	8.91	3.51	.29	.11
3	8.55	3.37	.28	.11
4	8.66	3.41	.30	.12
CLASS A EVAP	10.92	4.30	.35	.14

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL= 26.38 CM = 10.391N AVG= .85 CM/DAY = .34 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL= 8.91 CM = 3.511N AVG= .29 CM/DAY = .11 IN/DAY

AVE ET FROM LYS 3 AND 4
TOTAL= 8.73 CM = 3.441N AVG= .28 CM/DAY = .11 IN/DAY

MONTH 9 1968

AVG. WIND SPEED-
ANEM 1= 5.49 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE= 43.98 DEG F

TOTAL PRECIPITATION= .58 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	8.91	3.51	.32	.13
2	10.26	4.04	.34	.13
3	7.89	3.11	.27	.11
4	9.96	3.92	.33	.13
CLASS A EVAP	14.38	5.66	.48	.19

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL= 22.51 CM = 8.861N AVG= .75 CM/DAY = .30 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL= 10.02 CM = 3.941N AVG= .33 CM/DAY = .13 IN/DAY

AVE ET FROM LYS 3 AND 4
TOTAL= 8.98 CM = 3.53IN AVG= .30 CM/DAY = .12 IN/DAY

MONTH 10 1968

AVG. WIND SPEED-
ANEM 1= 5.85 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE= 38.25 DEG F

TOTAL PRECIPITATION= .26 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	4.95	1.95	.26	.10
2	5.15	2.03	.26	.10
3	4.37	1.72	.22	.09
4	4.52	1.78	.32	.13
CLASS A EVAP	6.78	2.67	.34	.13

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL= 11.95 CM = 4.701N AVG= .60 CM/DAY = .24 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL= 5.14 CM = 2.021N AVG= .26 CM/DAY = .10 IN/DAY

AVE ET FROM LYS 3 AND 4
TOTAL= 5.02 CM = 1.971N AVG= .25 CM/DAY = .10 IN/DAY
NOTE----TOTALS FOR THIS MONTH INCLUDE ONLY 21. DAYS.

MONTHLY AVERAGES OF SOUTH PARK ET DATA

MONTH 5, 1969

AVG. WIND SPEED = 5.09 MPH (2M)

AVEPAGE DAILY MEAN TEMPERATURE = 49.50 DEG F

TOTAL PRECIPITATION = .05 IN

EVAPOTPANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	5.60	2.20	.37	.15
2	4.33	1.71	.43	.17
CLASS A FVAP	2.83	1.11	.57	.22

EQUIVALENT EVAPORATION (EROM SOLAR RADIATION)-
TOTAL = 10.93 CM = 4.30IN, AVG = .68 CM/DAY = .27 IN/DAY

AVE ET FPOM LYS 1 AND 2
TOTAL = 6.12 CM = 2.41IN, AVG = .41 CM/DAY = .16 IN/DAY

NOTE----TOTALS FOR THIS MONTH INCLUDE ONLY 16. DAYS.

MONTH 6, 1969

AVG. WIND SPEED = 5.36 MPH (2M)

AVEPAGE DAILY MEAN TEMPERATURE = 48.58 DEG E

TOTAL PPECIPITATION = 2.05 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	8.24	3.24	.34	.14
2	11.80	4.65	.39	.15
CLASS A FVAP	15.99	6.30	.53	.21

EQUIVALENT EVAPORATION (FROM SOLAP RADIATION)-
TOTAL = 16.30 CM = 6.42IN, AVG = .54 CM/DAY = .21 IN/DAY

AVE ET FPOM LYS 1 AND 2
TOTAL = 11.25 CM = 4.43IN, AVG = .37 CM/DAY = .15 IN/DAY

MONTH 7, 1969

AVG. WIND SPEED = 3.53 MPH (2M)

AVERAGE DAILY MEAN TEMPEPATURE = 57.95 DEG F

TOTAL PRECIPITATION = 2.40 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	1.49	.59	.30	.12
2	13.05	5.14	.42	.17
CLASS A FVAP	15.84	6.24	.51	.20

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL = 20.71 CM = 8.15IN, AVG = .67 CM/DAY = .26 IN/DAY

AVE ET FPOM LYS 1 AND 2
TOTAL = 12.63 CM = 4.97IN, AVG = .41 CM/DAY = .16 IN/DAY

MONTH 8, 1969

AVG. WIND SPEED = 3.32 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE = 57.69 DEG E

TOTAL PRECIPITATION = 1.79 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	8.98	3.54	.32	.13
2	11.25	4.43	.36	.14
CLASS A FVAP	16.26	6.40	.52	.21

EQUIVALENT EVAPORATION (EROM SOLAR PADIATION)-
TOTAL = 21.36 CM = 8.41IN, AVG = .69 CM/DAY = .27 IN/DAY

AVE ET EPOM LYS 1 AND 2
TOTAL = 10.76 CM = 4.24IN, AVG = .35 CM/DAY = .14 IN/DAY

MONTH 9, 1969

AVG. WIND SPEED = 3.70 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE = 48.77 DEG F

TOTAL PRECIPITATION = 1.66 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	7.66	3.02	.26	.10
2	7.10	2.80	.24	.09
CLASS A EVAP	9.32	3.67	.31	.12

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL = 17.25 CM = 6.79IN, AVG = .58 CM/DAY = .23 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL = 7.38 CM = 2.91IN, AVG = .25 CM/DAY = .10 IN/DAY

MONTH 10, 1969

AVG. WIND SPEED = 5.67 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE = 46.25 DEG E

TOTAL PPECIPITATION = 0.00 IN

EVAPOTPANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	.54	.21	.27	.11
2	.51	.20	.25	.10
CLASS A FVAP	1.06	.42	.53	.21

EQUIVALENT EVAPORATION (FROM SOLAP PADIATION)-
TOTAL = 1.18 CM = .47IN, AVG = .59 CM/DAY = .23 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL = .52 CM = .21IN, AVG = .26 CM/DAY = .10 IN/DAY

NOTE----TOTALS FOR THIS MONTH INCLUDE ONLY 2. DAYS.

MONTHLY AVERAGES OF SOUTH PARK ET DATA

MONTH 5, 1970

AVG. WIND SPEED = 6.49 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE = 46.56 DEG F

TOTAL PRECIPITATION = .05 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	10.95	4.31	.50	.20
2	6.42	2.53	.40	.16
CLASS A EVAP	17.82	7.02	.74	.29

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL = 16.1[illegible] CM = 6.371N, AVG = .90 CM/DAY = .35 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL = 10.97 CM = 4.32IN, AVG = .46 CM/DAY = .18 IN/DAY

NOTE----TOTALS FOR THIS MONTH INCLUDE ONLY 27. DAYS.

MONTH 6, 1970

AVG. WIND SPEED = 5.35 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE = 51.23 DEG F

TOTAL PRECIPITATION = 1.97 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	15.06	5.93	.50	.20
2	15.45	6.08	.55	.22
CLASS A EVAP	19.22	7.57	.64	.25

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL = 28.12 CM =11.07IN, AVG = .94 CM/DAY = .37 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL = 15.76 CM = 6.20IN, AVG = .53 CM/DAY = .21 IN/DAY

MONTH 7, 1970

AVG. WIND SPEED = 3.51 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE = 58.03 DEG F

TOTAL PRECIPITATION = 2.28 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	14.65	5.77	.47	.19
2	14.49	5.71	.47	.18
CLASS A EVAP	15.29	6.02	.49	.19

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL = 26.29 CM =10.35IN, AVG = .85 CM/DAY = .33 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL = 14.57 CM = 5.74IN, AVG = .47 CM/DAY = .19 IN/DAY

MONTH 8, 1970

AVG. WIND SPEED = 3.03 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE = 55.55 DEG F

TOTAL PRECIPITATION = 2.70 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	9.37	3.69	.30	.12
2	9.05	3.56	.29	.11
CLASS A EVAP	13.02	5.12	.42	.17

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL = 22.73 CM = 8.95IN, AVG = .73 CM/DAY = .29 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL = 9.21 CM = 3.63IN, AVG = .30 CM/DAY = .12 IN/DAY

MONTH 9, 1970

AVG. WIND SPEED = 4.56 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE = 43.16 DEG F

TOTAL PRECIPITATION = 1.99 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	8.45	3.33	.29	.11
2	8.40	3.31	.29	.11
CLASS A EVAP	14.56	5.73	.50	.20

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL = 20.11 CM = 7.92IN, AVG = .69 CM/DAY = .27 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL = 8.42 CM = 3.32IN, AVG = .29 CM/DAY = .11 IN/DAY

NOTE----TOTALS FOR THIS MONTH INCLUDE ONLY 29. DAYS.

MONTHLY AVERAGES OF GUNNISON ET DATA

MONTH 4, 1969

AVG. WIND SPEED = 0.00 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE = 34.70 DEG F

TOTAL PRECIPITATION = 0.00 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	2.52	.99	.50	.20
2	2.44	.96	.49	.19
3	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00
CLASS A EVAP	.95	.37	.95	.37

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL = 1.69 CM = .67IN. AVG = .85 CM/DAY = .33 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL = 2.48 CM = .98IN. AVG = .50 CM/DAY = .20 IN/DAY

AVE ET FROM LYS 3 AND 4
TOTAL = 0.00 CM = 0.00IN. AVG =0.00 CM/DAY =0.00 IN/DAY

NOTE----TOTALS FOR THIS MONTH INCLUDE ONLY 5. DAYS.

MONTH 5, 1969

AVG. WIND SPEED = 4.69 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE = 47.02 DEG F

TOTAL PRECIPITATION = .72 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	14.05	5.53	.47	.18
2	13.44	5.29	.45	.18
3	12.40	4.88	.54	.21
4	11.08	4.36	.53	.21
CLASS A EVAP	17.55	6.91	.57	.22

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL = 25.88 CM =10.19IN. AVG = .83 CM/DAY = .33 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL = 13.74 CM = 5.41IN. AVG = .46 CM/DAY = .18 IN/DAY

AVE ET FROM LYS 3 AND 4
TOTAL = 12.35 CM = 4.86IN. AVG = .54 CM/DAY = .21 IN/DAY

MONTH 6, 1969

AVG. WIND SPEED = 4.17 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE = 49.87 DEG F

TOTAL PRECIPITATION = 2.33 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	12.69	5.00	.42	.17
2	12.26	4.83	.41	.16
3	12.28	4.84	.41	.16
4	10.87	4.28	.36	.14
CLASS A EVAP	16.37	6.44	.56	.22

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL = 24.59 CM = 9.68IN. AVG = .82 CM/DAY = .32 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL = 12.48 CM = 4.91IN. AVG = .42 CM/DAY = .16 IN/DAY

AVE ET FROM LYS 3 AND 4
TOTAL = 11.57 CM = 4.56IN. AVG = .39 CM/DAY = .15 IN/DAY

MONTH 7, 1969

AVG. WIND SPEED = 3.27 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE = 58.74 DEG F

TOTAL PRECIPITATION = 1.38 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	10.94	4.31	.42	.17
2	14.36	5.65	.46	.18
3	14.51	5.71	.50	.20
4	15.74	6.20	.51	.20
CLASS A EVAP	15.68	6.17	.51	.20

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL = 25.23 CM = 9.93IN. AVG = .81 CM/DAY = .32 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL = 13.92 CM = 5.48IN. AVG = .45 CM/DAY = .18 IN/DAY

AVE ET FROM LYS 3 AND 4
TOTAL = 15.63 CM = 6.15IN. AVG = .50 CM/DAY = .20 IN/DAY

MONTH 8, 1969

AVG. WIND SPEED = 3.33 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE = 58.29 DEG F

TOTAL PRECIPITATION = 1.96 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	7.75	3.05	.29	.11
2	9.73	3.83	.31	.12
3	8.79	3.46	.33	.13
4	8.65	3.41	.36	.14
CLASS A EVAP	16.99	6.69	.55	.22

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL = 23.79 CM = 9.36IN. AVG = .77 CM/DAY = .30 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL = 9.36 CM = 3.68IN. AVG = .30 CM/DAY = .12 IN/DAY

AVE ET FROM LYS 3 AND 4
TOTAL = 10.79 CM = 4.25IN. AVG = .35 CM/DAY = .14 IN/DAY

MONTH 9, 1969

AVG. WIND SPEED = 3.40 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE = 50.30 DEG F

TOTAL PRECIPITATION = 1.64 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	2.11	.83	.08	.03
2	2.95	1.16	.11	.04
3	3.61	1.42	.40	.16
4	4.24	1.67	.42	.17
CLASS A EVAP	8.68	3.42	.33	.13

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL = 18.00 CM = 7.09IN. AVG = .60 CM/DAY = .24 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL = 2.53 CM = 1.00IN. AVG = .10 CM/DAY = .04 IN/DAY

AVE ET FROM LYS 3 AND 4
TOTAL = 4.35 CM = 1.71IN. AVG = .44 CM/DAY = .17 IN/DAY

MONTHLY AVERAGES OF GUNNISON ET DATA

MONTH 4, 1970

AVG. WIND SPEED = 4.83 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE = 32.80 DEG F

TOTAL PRECIPITATION = .06 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	0.00	0.00	0.00	0.00
2	.31	.12	.10	.04
3	.92	.36	.31	.12
4	.90	.35	.30	.12
CLASS A EVAP	1.34	.53	.45	.18

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL = 1.68 CM = .661N, AVG = .84 CM/DAY = .33 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL = .31 CM = .121N, AVG = .10 CM/DAY = .04 IN/DAY

AVE ET FROM LYS 3 AND 4
TOTAL = .91 CM = .36IN, AVG = .30 CM/DAY = .12 IN/DAY

NOTE----TOTALS FOR THIS MONTH INCLUDE ONLY 5. DAYS.

MONTH 5, 1970

AVG. WIND SPEED = 4.90 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE = 44.53 DEG F

TOTAL PRECIPITATION = .24 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	9.43	3.71	.39	.15
2	8.09	3.18	.26	.10
3	13.38	5.27	.43	.17
4	12.93	5.09	.42	.16
CLASS A EVAP	18.93	7.45	.61	.24

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL = 31.78 CM =12.51IN, AVG =1.03 CM/DAY = .40 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL = 8.97 CM = 3.53IN, AVG = .29 CM/DAY = .11 IN/DAY

AVE ET FROM LYS 3 AND 4
TOTAL = 13.16 CM = 5.18IN, AVG = .42 CM/DAY = .17 IN/DAY

MONTH 6, 1970

AVG. WIND SPEED = 4.15 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE = 53.07 DEG F

TOTAL PRECIPITATION = .59 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	10.77	4.24	.45	.18
2	7.58	2.98	.38	.15
3	13.72	5.40	.49	.19
4	14.66	5.77	.49	.19
CLASS A EVAP	16.15	6.36	.54	.21

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL = 32.32 CM =12.72IN, AVG =1.08 CM/DAY = .42 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL = 13.67 CM = 5.38IN, AVG = .46 CM/DAY = .18 IN/DAY

AVE ET FROM LYS 3 AND 4
TOTAL = 14.83 CM = 5.84IN, AVG = .49 CM/DAY = .19 IN/DAY

MONTH 7, 1970

AVG. WIND SPEED = 3.03 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE = 59.37 DEG F

TOTAL PRECIPITATION = 1.79 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	12.73	5.01	.42	.17
2	15.84	6.23	.51	.20
3	13.88	5.46	.45	.18
4	13.06	5.14	.42	.17
CLASS A EVAP	14.08	5.54	.45	.18

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL = 31.25 CM =12.30IN, AVG =1.01 CM/DAY = .40 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL = 14.61 CM = 5.75IN, AVG = .47 CM/DAY = .19 IN/DAY

AVE ET FROM LYS 3 AND 4
TOTAL = 13.47 CM = 5.30IN, AVG = .43 CM/DAY = .17 IN/DAY

MONTH 8, 1970

AVG. WIND SPEED = 3.10 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE = 59.53 DEG F

TOTAL PRECIPITATION = 1.86 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	9.20	3.62	.30	.12
2	10.43	4.11	.34	.13
3	11.91	4.69	.38	.15
4	11.31	4.45	.42	.16
CLASS A EVAP	14.44	5.68	.47	.18

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL = 26.69 CM =10.51IN, AVG = .86 CM/DAY = .34 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL = 9.81 CM = 3.86IN, AVG = .32 CM/DAY = .12 IN/DAY

AVE ET FROM LYS 3 AND 4
TOTAL = 12.35 CM = 4.86IN, AVG = .40 CM/DAY = .16 IN/DAY

MONTH 9, 1970

AVG. WIND SPEED = 3.86 MPH (2M)

AVERAGE DAILY MEAN TEMPERATURE = 48.33 DEG F

TOTAL PRECIPITATION = 2.79 IN

EVAPOTRANSPIRATION -

LYS NO.	TOTAL(CM)	TOTAL(IN)	AVG(CM/DAY)	AVG(IN/DAY)
1	7.51	2.96	.28	.11
2	6.96	2.74	.26	.10
3	7.91	3.11	.29	.12
4	8.45	3.33	.31	.12
CLASS A EVAP	11.03	4.34	.41	.16

EQUIVALENT EVAPORATION (FROM SOLAR RADIATION)-
TOTAL = 19.89 CM = 7.83IN, AVG = .74 CM/DAY = .29 IN/DAY

AVE ET FROM LYS 1 AND 2
TOTAL = 7.23 CM = 2.85IN, AVG = .27 CM/DAY = .11 IN/DAY

AVE ET FROM LYS 3 AND 4
TOTAL = 8.18 CM = 3.22IN, AVG = .30 CM/DAY = .12 IN/DAY

NOTE----TOTALS FOR THIS MONTH INCLUDE ONLY 27. DAYS.

ACKNOWLEDGMENTS

The authors wish to express their sincere appreciation for the efforts of *Roy W. Hanson*, engineering technician, for his assistance in establishing field sites and data collection; *Jeff Lorimor*, agricultural engineer, for the 1971 data collected at Gunnison; and *M. L. Payne*, engineering technician, for his contribution in the design, development, and construction of automatic rainfall covers for ET tanks and the automatic photographic apparatus for recording daily anemometer and pyranometer readings. The authors also wish to thank Hartzell-Pfeiffenberger and Associates for their willingness to supply facilities, fencing, and personnel at the Garo sites in South Park, Colo. This portion of the cooperative effort was covered under a formal cooperative agreement with the Agricultural Research Service and was under direct technical supervision of the authors.

U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
WESTERN REGION
2850 TELEGRAPH AVENUE
BERKELEY, CALIFORNIA 94705

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

POSTAGE AND FEES PAID
U. S. DEPARTMENT OF
AGRICULTURE
AGR 101

U.S.MAIL